
City of Marysville 2009 Water Comprehensive Plan Technical Memorandum

FINAL



Date: July 30, 2008
Subject: Planning Data and Draft Demand Forecast
To: David Zull, City of Marysville
From: Kelly O'Rourke, HDR
cc: Andrew Graham, HDR
Project No.: 61281

This technical memorandum (tech memo) serves as the first deliverable for Task 5 Demand Forecast for the 2009 Water Comprehensive Plan (WCP) Update project.

This tech memo summarizes historical and projected demographics, summarizes historical water use characteristics, and provides a draft demand forecast. The tech memo is intended to allow the City to review the assumptions and results before this information is used to finalize the demand forecast and prepare the associated chapter.

This tech memo is structured in sections for ease of review. The sections are as follows:

- Section 1 Demand Forecast Methodology - describes the method used to develop the demand forecast

The subsequent sections provide tables and figures related to the following subjects:

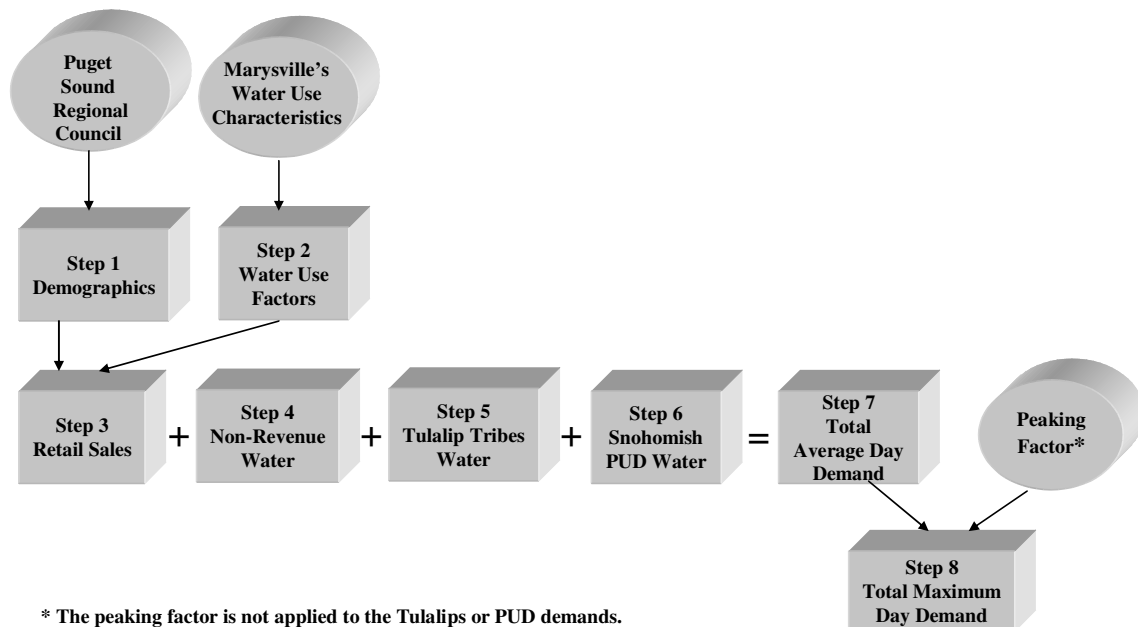
- Section 2 Demographics
- Section 3 Production/Purchases and Peaking Factor
- Section 4 Sales, Customer Categories, Connections
- Section 5 Water Balance, Leakage, Non-Revenue Water
- Section 6 Water Use Factors and ERUs
- Section 7 Demand Forecast Results

1. Demand Forecast Methodology

The methodology used to develop the demand forecast is shown in Figure 1-1. The basic process is to combine demographic data with water use factors to develop the demand for retail sales. Demand components for non-revenue water, as well as for the Tulalip Tribes and Snohomish PUD, are then added in to create the total average day demand. To generate the total maximum day demand, a peaking factor is applied to all demands except the Tulalip and PUD

demands. This process is described in more detail below, using examples from tables throughout this technical memorandum.

Figure 1-1 Demand Forecast Methodology



Step 1 Demographics

Demographic information is based on data obtained from the Puget Sound Regional Council or PSRC (October 2006 data set). The PSRC develops demographic projections for the four central Puget Sound Counties of King, Pierce, Snohomish, and Kitsap.

Below are the five demographic categories used by the PSRC, as well as information as to how they relate to the demand forecast:

- 1) **Population** - Not used for the demand forecast, however data is presented to meet Washington State Department of Health water system planning requirements.
- 2) **Single Family Households** – Key input to demand forecast.
- 3) **Multifamily Households** – Key input to demand forecast.
- 4) **Employment** – Key input to demand forecast.

The PSRC data provides projections for key milestone years. Those milestone years are 2000, 2010, 2020, 2030, and 2040. For the Marysville WCP analysis, the 20 year planning horizon concludes in Year 2028, so data was prepared through that year. Non-milestone years were interpolated using the milestone years.

The PSRC data is allocated to small geographic areas called Traffic Analysis Zones (TAZs). The TAZ boundaries are independent of the City's service area. Therefore, GIS analysis was used to determine which TAZs, or portions thereof, are in each of the City's water system pressure zones. The boundaries of the TAZs are overlayed on the pressure zones. Figure 2-1 demonstrates this. For any TAZ that is fully in a pressure zone, all of the demographics in that TAZ are assigned to that pressure zone. For any TAZ not fully in a pressure zone, a portion of the demographics in that TAZ are assigned to the pressure zone based on the percent of the TAZ in the pressure zone. For example, if 40% of the TAZ is in the pressure zone, then 40% of the demographics are assigned to the pressure zone.

The City is not currently serving every area within its Retail Service Area, however it plans to expand where it serves within its Retail Service area during the 20 year WCP planning period. Therefore, it is important that demographics are incorporated into the demand forecast at the appropriate time. Figure 2-2 shows when the City anticipates serving areas within its Retail Service Area.

Once the initial demographic projections were completed, the numbers were groundtruthed.

For single family, the estimated number of single family households was compared to the City's historical connection data. The number of single family households was less than the number of single family connections. The exact reason for this discrepancy is unknown, however the PSRC numbers are estimates while the City's connection data is a known quantity. Therefore, the demographics were adjusted to start with the number of 2006 single family connections and that number was increased over the planning period using PSRC's annual growth rate for single family households.

A similar groundtruthing for multifamily households was not feasible since multifamily connection data is for buildings rather than for households. However, the water use factor, analysis which divides actual multifamily sales by the initial estimate of the number of multifamily households, resulted in an unrealistically high multifamily water use factor. Since it is believed the sales numbers are correct, it is assumed the initial multifamily household projections were incorrect. Marysville staff believe the multifamily water use factor is approximately 85% of the single family household number. Therefore, the 2006 number of multifamily households from the initial analysis was increased so that the resulting multifamily water use factor is 85% of the single family water use factor. Then the adjusted number of 2006 multifamily households was increased over the planning period using PSRC's multifamily annual growth rate.

The resulting demographics can be found in Tables 2-1 to 2-6. Below are a few of the key results:

- As shown in Table 2-3, the number of single family households is expected to increase from 18,880 in 2009 (WCP Year 1), to 20,897 in 2014 (WCP Year 6), to 29,212 in 2028 (WCP Year 20).
- As shown in Table 2-5, the number of multifamily households is expected to increase from 4,978 in 2009 (WCP Year 1), to 5,933 in 2014 (WCP Year 6), to 8,140 in 2028 (WCP Year 20).
- As shown in Table 2-6, the number of employees is expected to increase from 12,385 in 2009 (WCP Year 1) to 13,594 in 2014 (WCP Year 6), to 17,364 in 2028 (WCP Year 20).

Step 2 Water Use Factors

Water use factors are developed for the three key demographic units: 1) single family households, 2) multifamily households, and 3) employees. The water use factors are generated by analyzing Marysville's water use characteristics including production, sales, customer categories, and connections. As shown in Table 6-1, the water use factors are:

- 188 gallons per day (gpd) per single family household
- 160 gpd per multifamily household
- 90 gpd per employee

Two issues are important to understand about these water use factors.

First, as described above regarding the demographic projections, the multifamily water use factor was estimated by City staff to be 85% of the single family water use factor. An analysis dividing the actual multifamily sales by an initial estimate of the number of multifamily households resulted in an unrealistically high multifamily water use factor (248 gpd). Since it is believed the sales numbers are correct, it is assumed the initial multifamily household estimate was incorrect.

Second, water use in the non-residential sector is extremely variable due to the wide variety of businesses and institutions that make up this sector. The water use per employee number is an important and accurate input into the demand forecasting process. However, it is a system-wide average value. Actual water use per employee will vary substantially from one customer to another.

Step 3 Retail Sales Demand

The demographics projections (from Step 1) are multiplied by the water use factors (from Step 2) to generate the demand for the single family, multifamily, and non-residential sectors. For example, in 2009 the 18,880 single family households were multiplied by the water use factor of 188 gpd to result in 3,549,480 gpd demand for the single family sector.

Step 4 Non-Revenue Demand

The amount of retail non-revenue water expected must be projected. Since the water that Marysville wheels to the Tulalip Tribes and Snohomish PUD is technically considered non-revenue water, the term “retail non-revenue water” is used to represent the non-revenue water that is used in Marysville’s retail service area (e.g., flushing water, leaks).

The retail non-revenue water is calculated by adding the demands projected thus far (from Steps 1-3) and multiplying by a retail non-revenue water factor. As shown in Table 5-2, the 2004-2006 average for retail non-revenue water as a percent of billed consumption was 9%. Therefore, 9% was used as the retail non-revenue water multiplying factor. For example, in 2009, the 464,155 gpd of retail non-revenue water was calculated by multiplying the total projected retail sales of 5,460,649 by 9%.

Steps 5 and 6 Tulalip Tribes and Snohomish PUD Demand

Marysville conveys Everett water through the City’s pipes to the Tulalip Tribes and Snohomish PUD. The demand for the Tulalips and Snohomish PUD is based on their respective allocations from the Joint Operating Agreement (JOA) between the City, the PUD and the Tulalips.

The Tulalips demands were developed by increasing actual demands by twice the highest annual growth rate in recent years. The highest annual growth rate in Tulalips demands in recent years was 29%. Therefore, the 2006 actual Tulalips demands were increased by 58%. Each year thereafter was increased by 58%, until the Tulalips’ full JOA allotment of 4,090,000 gpd was reached in 2012. The demands were then held constant for the remaining years. The City recognizes that the Tulalips demands may decrease once the pipeline being built to deliver water directly from Everett to the Tribes is complete. However, the City is planning conservatively for this WCP and thus includes demands for the Tulalips that reflect the JOA agreement.

The Snohomish PUD demands were developed by increasing actual demands by the most recent 3-year average annual growth rate. The 2004 to 2006 average annual growth rate in PUD demands was 18%. Therefore, the 2006 actual PUD demands were increased by 18%. Each subsequent year was then increased by 18%, until the PUD's full JOA allotment of 3,420,000 gpd was reached in 2019. The demands were then held constant for the remaining years.

Step 7 Total Average Day Demand (ADD)

The average day demand was calculated by adding the demands for single family, multifamily, non-residential, non-revenue water, the Tulalip Tribes and Snohomish PUD. For example, the 2009 average day demand is generated as follows:

3,549,480	gpd Single Family
796,549	gpd Multifamily
1,114,621	gpd Non-Residential
464,155	gpd Non-revenue Water
1,452,329	gpd Tulalip Tribes
<u>+ 708,636</u>	<u>gpd Snohomish PUD</u>
= 8,085,770	gpd Total Average Day Demand

As shown in Table 7-1, the total average day demand is expected to increase from 8,085,770 gpd in 2009 (WCP Year 1) to 12,343,539 gpd in 2014 (WCP Year 6), and to 16,577,328 gpd in 2028 (WCP Year 20).

Step 8 Total Maximum Day Demand (MDD)

To generate the total maximum day demand, a peaking factor is applied to all demands except the Tulalip and PUD demands. As shown in Table 3-2, the peaking factor is 1.7. For example, the 2009 maximum day demand is generated as follows:

$$\begin{aligned} & 5,924,804 \text{ gpd ADD Retail Demand (retail sales + retail non-revenue water)} \\ & \quad \times 1.7 \text{ peaking factor} \\ = & 10,072,167 \text{ gpd MDD Retail Demand (retail sales + retail non-revenue water)} \\ & 1,452,329 \text{ gpd Tulalip Tribes} \\ & + 708,636 \text{ gpd Snohomish PUD} \\ = & 12,233,133 \text{ gpd Total Maximum Day Demand} \end{aligned}$$

As shown in Table 7-1, the total maximum day demand is expected to increase from 12,233,133 gpd in 2009 (WCP Year 1) to 16,977,435 gpd in 2014 (WCP Year 6), and to 22,924,457 gpd in 2028 (WCP Year 20).

Step 9 Conservation Adjustment

The methodology outlined in Steps 1 through 8 creates a baseline demand forecast. This baseline forecast is then adjusted for conservation. (Note that the conservation adjustment step is not shown on Figure 1-1.)

The conservation adjustment was accomplished by reducing the water use factors in 2009-2014 to reflect the estimated conservation savings from the conservation program included in Chapter 4. The single family water use factor shifts from 188 gpd per single family household in 2008 to 184 gpd by 2014. The multifamily water use factor shifts from 160 gpd per multifamily household in 2008 to 156.6 gpd by 2014. The non-residential water use factor shifts from 90 gpd per employee in 2008 to 88.1 gpd by 2014.

Marysville plans to continue conservation efforts beyond 2014. However, since the conservation goals beyond 2014 are not defined at this time, the water use factors are then held constant for all years beyond 2014.

These water use factors, as well as the resulting demands, are shown in Table 7-2. With the conservation adjustment, the total average day demand is expected to increase from 8,020,898 gpd in 2009 (WCP Year 1) to 12,203,650 gpd in 2014 (WCP Year 6), and to 16,385,719 gpd in 2028 (WCP Year 20).

Table 7-2 is the only table in Section 7 that incorporates conservation. The rest of the tables show numbers without additional conservation. This is because the hydraulic modeling for the WCP uses the demands without additional conservation in order to error on the side of caution.

2. Demographics

Figure 2-1 Pressure Zones / TAZ Analysis

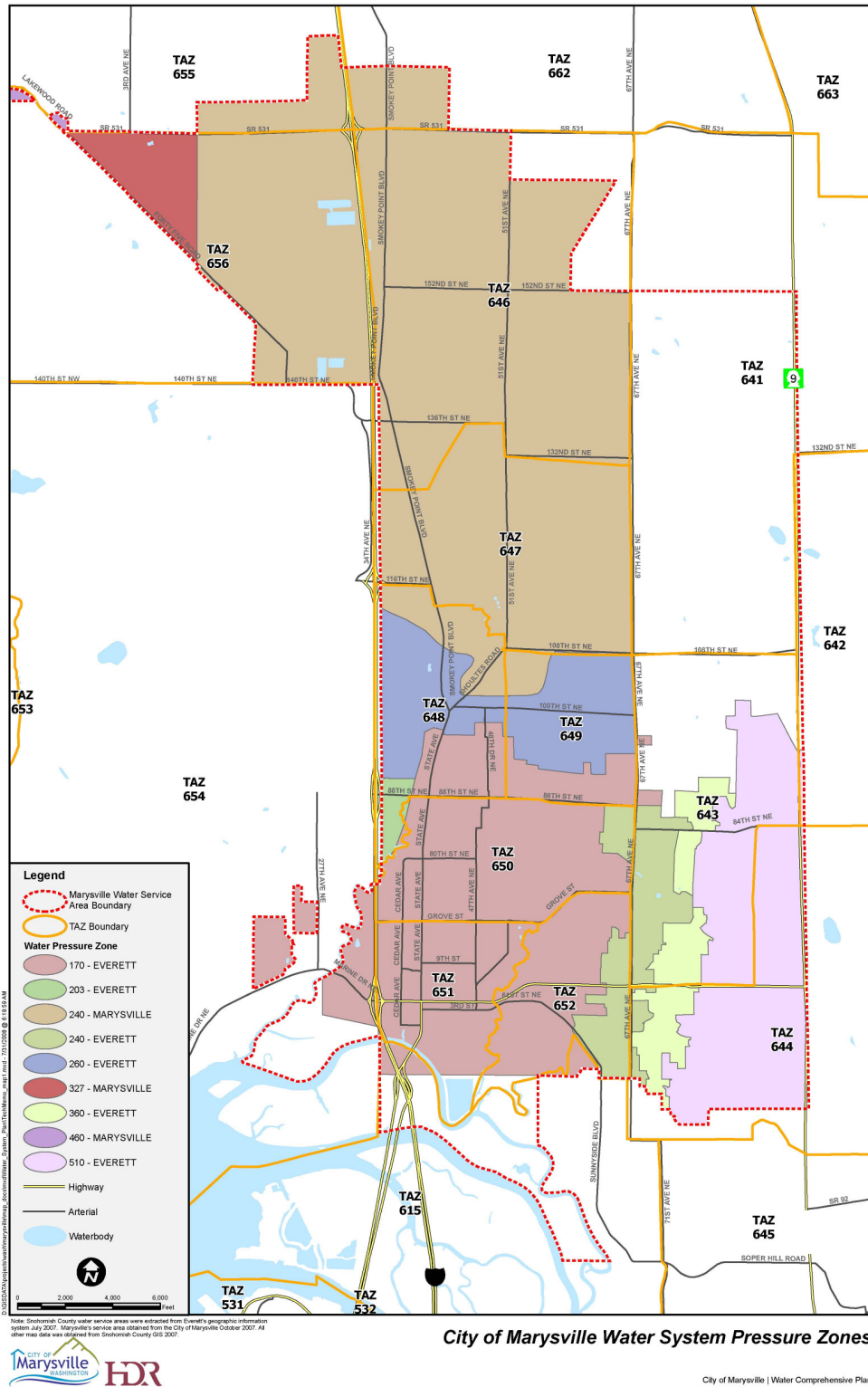


Figure 2-2 Service Area Timing

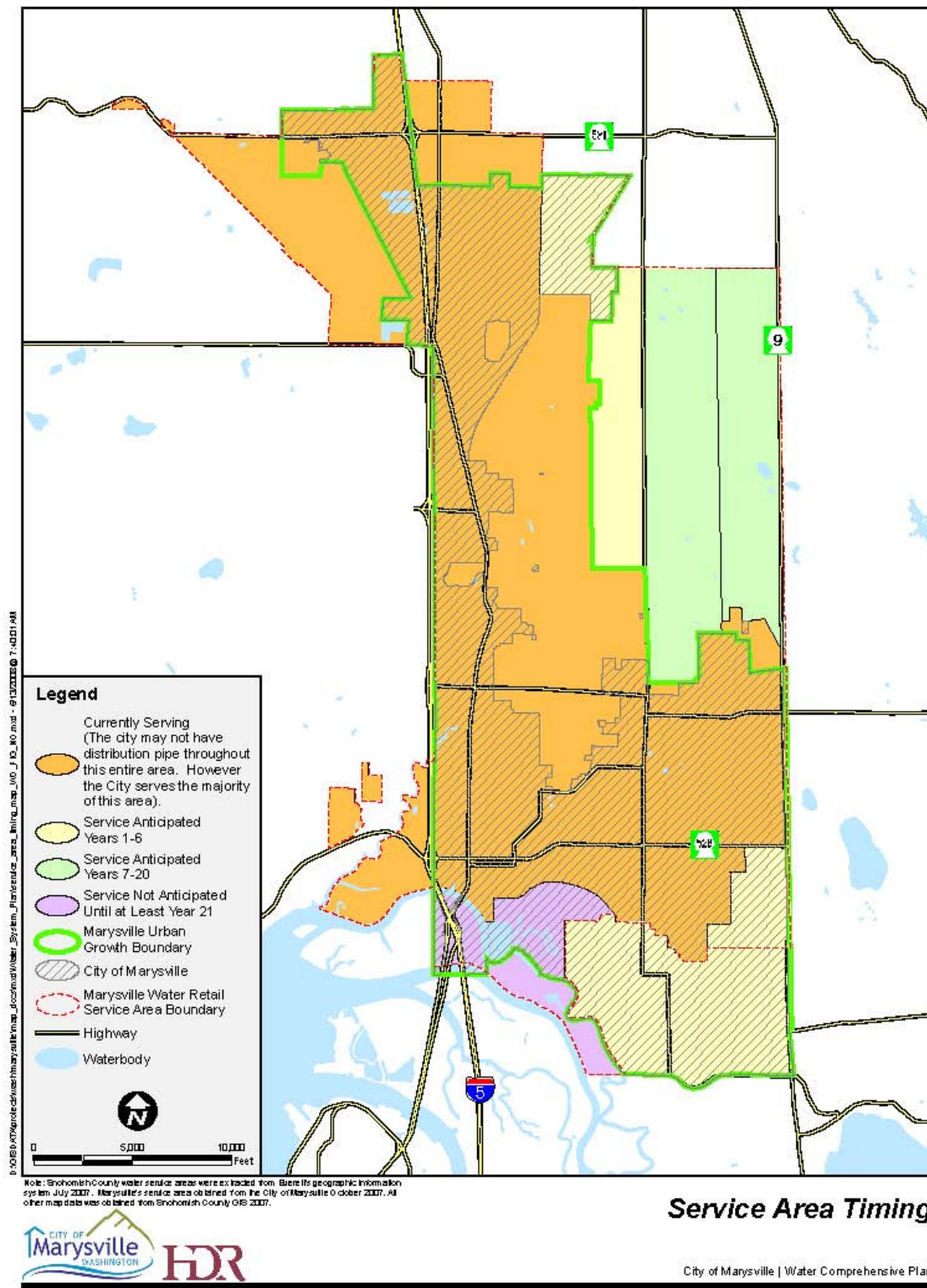


Table 2-1 Projected Population¹

Calendar Year	Plan Year	Population											
		Pressure Zone in North "Marysville" Service Area ²			Pressure Zone in South "Everett" Service Area ³						Not in existing pressure zone ⁴	Total	
		240	327	460	170	203	240	260	360	510		Qty	Annual Increase
2006	n/a	11,967	274	15	17,853	310	2,946	5,782	1,074	2,996	421	43,637	n/a
2007	n/a	12,176	324	16	18,101	314	3,006	5,862	1,110	3,096	432	44,436	1.8%
2008	n/a	12,385	373	16	18,348	318	3,067	5,942	1,145	3,195	444	45,235	1.8%
2009	1	16,130	423	16	18,596	323	3,128	6,026	1,181	3,823	2,568	52,213	15.4%
2010	2	16,400	473	16	18,844	327	3,189	6,106	1,217	3,938	2,633	53,142	1.8%
2011	3	16,718	522	16	19,144	332	3,266	6,203	1,263	4,089	2,711	54,265	2.1%
2012	4	17,037	572	17	19,444	337	3,343	6,300	1,310	4,240	2,789	55,389	2.1%
2013	5	17,355	622	17	19,745	342	3,421	6,397	1,357	4,391	2,866	56,513	2.0%
2014	6	17,674	672	17	20,045	348	3,498	6,494	1,404	4,541	2,944	57,637	2.0%
2015	7	17,992	721	17	20,373	353	3,575	6,591	1,451	4,692	3,004	62,070	7.7%
2016	8	18,311	771	18	20,674	358	3,653	6,688	1,498	4,843	3,095	63,308	2.0%
2017	9	18,629	821	18	20,975	363	3,730	6,785	1,545	4,994	3,186	64,546	2.0%
2018	10	18,948	870	18	21,277	368	3,807	6,882	1,592	5,144	3,277	65,784	1.9%
2019	11	19,266	920	19	21,578	373	3,885	6,979	1,639	5,295	3,368	67,021	1.9%
2020	12	19,585	970	19	21,879	379	3,962	7,076	1,686	5,446	3,459	68,259	1.8%
2021	13	19,888	1,019	19	22,198	384	4,028	7,178	1,719	5,553	3,549	69,382	1.6%
2022	14	20,190	1,069	20	22,517	390	4,094	7,281	1,752	5,660	3,639	70,521	6.0%
2023	15	20,493	1,119	20	22,836	395	4,160	7,384	1,785	5,767	3,729	71,629	-2.6%
2024	16	20,796	1,169	20	23,155	401	4,226	7,487	1,818	5,874	3,806	72,752	1.6%
2025	17	21,099	1,218	21	23,474	406	4,292	7,590	1,851	5,982	3,906	73,875	1.5%
2026	18	21,402	1,268	21	23,793	412	4,358	7,692	1,885	6,089	4,009	74,998	1.5%
2027	19	21,705	1,318	21	24,112	417	4,424	7,795	1,918	6,196	4,119	76,121	1.5%
2028	20	22,008	1,367	22	24,431	423	4,490	7,898	1,951	6,303	4,252	77,244	1.5%

1. For years 2006 to 2028, the demographics are based on data from the Puget Sound Regional Council or PSRC (October 2007 data set). The PSRC data uses four demographic categories: 1) population, 2) single family households, 3) multifamily households, and 4) employment.
2. The North service area is served by the City's own wells.
3. The South service area is served by water the City purchases from Everett.
4. These demographics are associated with areas that are not currently in a pressure zone. They will be added to pressure zones as the City extends its infrastructure.

Table 2-2 Projected Single Family Households – Original Analysis Based on PSRC Numbers¹

Calendar Year	Plan Year	Single Family Households - Original Analysis Based on PSRC numbers ⁵											
		Pressure Zone in North "Marysville" Service Area ²			Pressure Zone in South "Everett" Service Area ³						Not in existing pressure zone ⁴	Total	
		240	327	460	170	203	240	260	360	510		Qty	Annual Increase
2006	n/a	3,833	101	20	4,728	100	831	1,878	326	919	129	12,864	n/a
2007	n/a	3,907	119	21	4,803	102	850	1,907	338	951	132	13,131	2.1%
2008	n/a	3,982	137	22	4,879	104	869	1,937	349	983	136	13,397	2.0%
2009	1	5,165	155	23	4,954	105	888	1,967	361	1,193	820	15,631	16.7%
2010	2	5,161	173	24	4,873	105	897	1,985	377	1,244	838	15,678	0.3%
2011	3	5,286	192	25	4,972	107	923	2,023	393	1,297	867	16,083	2.6%
2012	4	5,410	210	26	5,071	109	949	2,061	409	1,349	896	16,489	2.5%
2013	5	5,534	228	27	5,170	111	975	2,099	425	1,402	924	16,894	2.5%
2014	6	5,658	246	28	5,269	113	1,000	2,137	441	1,455	953	17,300	2.4%
2015	7	5,782	265	29	5,376	115	1,026	2,175	457	1,508	2,076	18,808	8.7%
2016	8	5,907	283	30	5,475	117	1,052	2,213	473	1,561	2,145	19,255	2.4%
2017	9	6,031	301	31	5,574	119	1,077	2,251	489	1,613	2,215	19,702	2.3%
2018	10	6,155	319	32	5,674	121	1,103	2,289	505	1,666	2,285	20,149	2.3%
2019	11	6,279	338	33	5,773	123	1,129	2,327	521	1,719	2,355	20,596	2.2%
2020	12	6,349	356	34	5,659	123	1,144	2,346	545	1,793	2,437	20,785	0.9%
2021	13	6,476	374	35	5,765	125	1,168	2,389	558	1,837	2,494	21,220	2.1%
2022	14	6,603	392	36	5,872	127	1,192	2,431	571	1,881	2,550	21,656	2.1%
2023	15	6,730	411	37	5,978	130	1,216	2,474	585	1,925	2,607	22,091	2.0%
2024	16	6,857	429	38	6,085	132	1,240	2,516	598	1,968	2,663	22,526	2.0%
2025	17	6,984	447	39	6,191	134	1,264	2,559	611	2,012	2,720	22,962	1.9%
2026	18	7,111	465	40	6,298	137	1,288	2,602	624	2,056	2,776	23,397	1.9%
2027	19	7,238	484	41	6,404	139	1,312	2,644	638	2,099	2,833	23,832	1.9%
2028	20	7,366	502	42	6,511	141	1,337	2,687	651	2,060	2,889	24,184	1.5%

1. For years 2006 to 2028, the demographics are based on data from the Puget Sound Regional Council or PSRC (October 2007 data set). The PSRC data uses four demographic categories: 1) population, 2) single family households, 3) multifamily households, and 4) employment.
2. The North service area is served by the City's own wells.
3. The South service area is served by water the City purchases from Everett.
4. These demographics are associated with areas that are not currently in a pressure zone. They will be added to pressure zones as the City extends its infrastructure.
5. The analysis of the PSRC data resulted in a number for single family households in Marysville's service area for 2006 that was 82% lower than the number of Marysville's single family connections in 2006. Therefore, the number of Maryville's 2006 connections were used as the number of 2006 single family connections and that number was increased over the planning period using PSRC's annual growth rate for single family households.

Table 2-3 Projected Single Family Households – Adjusted¹

Calendar Year	Plan Year	Single Family Households - Adjusted ⁵											
		Pressure Zone in North "Marysville" Service Area ²			Pressure Zone in South "Everett" Service Area ³						Not in existing pressure zone ⁴	Total	
		240	327	460	170	203	240	260	360	510		Qty	Annual Increase
2006	n/a	4,629	121	25	5,711	121	1,003	2,269	394	1,110	155	15,539	n/a
2007	n/a	4,719	143	26	5,802	123	1,026	2,304	408	1,148	160	15,861	2.1%
2008	n/a	4,810	165	27	5,893	125	1,049	2,340	422	1,187	164	16,182	2.0%
2009	1	6,239	188	28	5,984	127	1,072	2,377	436	1,441	991	18,880	16.7%
2010	2	6,235	210	29	5,886	126	1,084	2,397	455	1,502	1,013	18,937	0.3%
2011	3	6,385	232	30	6,005	129	1,115	2,443	475	1,566	1,047	19,427	2.6%
2012	4	6,535	254	31	6,125	131	1,146	2,489	494	1,630	1,082	19,917	2.5%
2013	5	6,685	276	33	6,245	134	1,177	2,535	513	1,694	1,116	20,407	2.5%
2014	6	6,835	298	34	6,364	136	1,208	2,581	532	1,757	1,151	20,897	2.4%
2015	7	6,985	320	35	6,493	139	1,239	2,627	552	1,821	2,507	22,718	8.7%
2016	8	7,135	342	36	6,613	142	1,270	2,673	571	1,885	2,591	23,258	2.4%
2017	9	7,285	364	37	6,733	144	1,301	2,719	590	1,949	2,676	23,798	2.3%
2018	10	7,435	386	38	6,853	147	1,332	2,765	610	2,013	2,760	24,338	2.3%
2019	11	7,585	408	40	6,973	149	1,363	2,811	629	2,076	2,844	24,878	2.2%
2020	12	7,669	430	41	6,835	148	1,381	2,834	658	2,166	2,944	25,107	0.9%
2021	13	7,822	452	42	6,964	151	1,411	2,885	674	2,219	3,012	25,632	2.1%
2022	14	7,976	474	43	7,093	154	1,440	2,937	690	2,272	3,080	26,158	2.1%
2023	15	8,129	496	44	7,221	157	1,469	2,988	706	2,325	3,149	26,684	2.0%
2024	16	8,283	518	46	7,350	159	1,498	3,040	722	2,377	3,217	27,210	2.0%
2025	17	8,436	540	47	7,478	162	1,527	3,091	738	2,430	3,285	27,735	1.9%
2026	18	8,590	562	48	7,607	165	1,556	3,142	754	2,483	3,354	28,261	1.9%
2027	19	8,743	584	49	7,736	168	1,585	3,194	770	2,536	3,422	28,787	1.9%
2028	20	8,897	606	50	7,864	171	1,614	3,245	786	2,488	3,490	29,212	1.5%

1. For years 2006 to 2028, the demographics are based on data from the Puget Sound Regional Council or PSRC (October 2007 data set). The PSRC data uses four demographic categories: 1) population, 2) single family households, 3) multifamily households, and 4) employment.
2. The North service area is served by the City's own wells.
3. The South service area is served by water the City purchases from Everett.
4. These demographics are associated with areas that are not currently in a pressure zone. They will be added to pressure zones as the City extends its infrastructure.
5. The analysis of the PSRC data resulted in a number for single family households in Marysville's service area for 2006 that was 82% lower than the number of Marysville's single family connections in 2006. Therefore, the number of Marysville's 2006 connections were used as the number of 2006 single family connections and that number was increased over the planning period using PSRC's annual growth rate for single family households.

Table 2-4 Projected Multifamily Households – Original Analysis Based on PSRC Numbers¹

Calendar Year	Plan Year	Multi Family Households - Original Analysis Based on PSRC numbers ⁵											
		Pressure Zone in North "Marysville" Service Area ²			Pressure Zone in South "Everett" Service Area ³						Not in existing pressure zone ⁴	Total	
		240	327	460	170	203	240	260	360	510		Qty	Annual Increase
2006	n/a	236	1	0	2,332	22	200	131	11	29	6	2,968	n/a
2007	n/a	240	1	0	2,369	22	204	134	12	30	6	3,017	1.6%
2008	n/a	245	1	0	2,406	23	207	136	12	31	6	3,066	1.6%
2009	1	313	1	0	2,443	23	211	138	12	32	44	3,216	4.9%
2010	2	417	1	0	2,636	25	223	152	8	20	49	3,532	9.8%
2011	3	428	1	0	2,691	26	228	155	8	21	50	3,607	2.1%
2012	4	438	1	0	2,745	27	232	158	8	21	52	3,682	2.1%
2013	5	448	2	0	2,799	27	237	161	9	22	53	3,758	2.0%
2014	6	458	2	0	2,853	28	242	164	9	23	55	3,833	2.0%
2015	7	468	2	0	2,908	28	246	167	9	24	72	3,924	2.4%
2016	8	478	2	0	2,962	29	251	170	10	25	74	4,000	1.9%
2017	9	488	2	0	3,017	29	256	173	10	25	76	4,076	1.9%
2018	10	498	2	0	3,071	30	260	176	10	26	78	4,152	1.9%
2019	11	508	2	0	3,125	30	265	179	11	27	80	4,228	1.8%
2020	12	573	3	0	3,393	33	280	201	3	6	69	4,561	7.9%
2021	13	584	3	0	3,457	34	285	205	3	7	71	4,648	1.9%
2022	14	596	3	0	3,521	35	291	208	3	7	73	4,735	1.9%
2023	15	607	3	0	3,586	35	296	212	3	7	74	4,823	1.8%
2024	16	618	3	0	3,650	36	301	216	3	7	76	4,910	1.8%
2025	17	629	3	0	3,715	37	306	220	3	7	78	4,997	1.8%
2026	18	640	3	0	3,779	37	311	223	3	7	79	5,084	1.7%
2027	19	652	3	0	3,844	38	317	227	3	8	81	5,172	1.7%
2028	20	663	4	0	3,908	38	322	231	3	8	83	5,259	1.7%

1. For years 2006 to 2028, the demographics are based on data from the Puget Sound Regional Council or PSRC (October 2007 data set). The PSRC data uses four demographic categories: 1) population, 2) single family households, 3) multifamily households, and 4) employment.

2. The North service area is served by the City's own wells.

3. The South service area is served by water the City purchases from Everett.

4. These demographics are associated with areas that are not currently in a pressure zone. They will be added to pressure zones as the City extends its infrastructure.

5. The analysis of the PSRC data resulted in a number for multifamily households in Marysville's service area that, when combined with the actual multifamily sales, resulted in an unrealistically high multifamily water use factor (248 gpd). Since it appears that the sales numbers are correct, it is assumed that the multifamily household numbers are incorrect. Marysville staff believe the multifamily water use factor is approximately 85% of the single family household number. Therefore, the 2006 number of multifamily households was increased so that the resulting multifamily water use factor is 85% of the single family water use factor. Then the number of 2006 multifamily households was increased over the planning period using PSRC's multifamily annual growth rate.

Table 2-5 Projected Multifamily Households - Adjusted¹

Calendar Year	Plan Year	Multi Family Households - Adjusted ⁵											
		Pressure Zone in North "Marysville" Service Area ²			Pressure Zone in South "Everett" Service Area ³						Not in existing pressure zone ⁴	Total	
		240	327	460	170	203	240	260	360	510		Qty	Annual Increase
2006	n/a	365	1	0	3,609	34	310	204	17	44	9	4,594	n/a
2007	n/a	372	1	0	3,667	34	315	207	18	46	10	4,670	1.6%
2008	n/a	379	1	0	3,724	35	321	210	19	47	10	4,746	1.6%
2009	1	484	2	0	3,781	36	326	213	19	49	68	4,978	4.9%
2010	2	646	2	0	4,081	39	345	235	12	30	75	5,466	9.8%
2011	3	662	2	0	4,165	40	352	240	12	32	78	5,583	2.1%
2012	4	677	2	0	4,249	41	360	244	13	33	80	5,700	2.1%
2013	5	693	2	0	4,333	42	367	249	13	34	82	5,816	2.0%
2014	6	709	3	0	4,417	43	374	254	14	36	85	5,933	2.0%
2015	7	724	3	0	4,501	43	381	258	14	37	111	6,074	2.4%
2016	8	740	3	0	4,585	44	388	263	15	38	114	6,191	1.9%
2017	9	756	3	0	4,669	45	395	268	15	39	117	6,309	1.9%
2018	10	771	3	0	4,753	46	403	272	16	41	121	6,426	1.9%
2019	11	787	4	0	4,837	47	410	277	16	42	124	6,544	1.8%
2020	12	887	4	0	5,251	52	434	311	4	10	107	7,060	7.9%
2021	13	905	4	0	5,351	53	442	317	4	10	110	7,195	1.9%
2022	14	922	4	0	5,451	54	450	322	4	10	112	7,330	1.9%
2023	15	939	4	0	5,550	55	458	328	4	11	115	7,465	1.8%
2024	16	957	5	0	5,650	56	466	334	4	11	117	7,600	1.8%
2025	17	974	5	0	5,750	57	474	340	4	11	120	7,735	1.8%
2026	18	991	5	0	5,850	58	482	346	4	11	123	7,870	1.7%
2027	19	1,009	5	0	5,949	59	490	352	5	12	125	8,005	1.7%
2028	20	1,026	5	0	6,049	60	498	357	5	12	128	8,140	1.7%

1. For years 2006 to 2028, the demographics are based on data from the Puget Sound Regional Council or PSRC (October 2007 data set). The PSRC data uses four demographic categories: 1) population, 2) single family households, 3) multifamily households, and 4) employment.

2. The North service area is served by the City's own wells.

3. The South service area is served by water the City purchases from Everett.

4. These demographics are associated with areas that are not currently in a pressure zone. They will be added to pressure zones as the City extends its infrastructure.

5. The analysis of the PSRC data resulted in a number for multifamily households in Marysville's service area that, when combined with the actual multifamily sales, resulted in an unrealistically high multifamily water use factor (248 gpd). Since it appears that the sales numbers are correct, it is assumed that the multifamily household numbers are incorrect. Marysville staff believe the multifamily water use factor is approximately 85% of the single family household number. Therefore, the 2006 number of multifamily households was increased so that the resulting multifamily water use factor is 85% of the single family water use factor. Then the number of 2006 multifamily households was increased over the planning period using PSRC's multifamily annual growth rate.

Table 2-6 Projected Employment¹

Calendar Year	Plan Year	Employment											
		Pressure Zone in North "Marysville" Service Area ²			Pressure Zone in South "Everett" Service Area ³						Not in existing pressure zone ⁴	Total	
		240	327	460	170	203	240	260	360	510		Qty	Annual Increase
2006	n/a	3,737	34	2	5,521	100	264	722	12	36	56	10,482	n/a
2007	n/a	3,809	40	2	5,572	100	266	726	12	37	58	10,623	1.3%
2008	n/a	3,882	47	2	5,623	100	269	730	12	39	60	10,765	1.3%
2009	1	5,187	53	2	5,674	101	272	735	13	53	295	12,385	15.0%
2010	2	5,284	59	2	5,725	101	275	739	13	55	300	12,555	1.4%
2011	3	5,427	65	2	5,811	102	279	748	14	58	308	12,814	2.1%
2012	4	5,570	71	2	5,896	103	284	757	15	61	315	13,074	2.0%
2013	5	5,713	78	2	5,981	104	288	765	16	64	323	13,334	2.0%
2014	6	5,855	84	2	6,066	105	293	774	16	67	330	13,594	1.9%
2015	7	5,998	90	2	6,152	107	298	783	17	70	378	13,894	2.2%
2016	8	6,141	96	2	6,237	108	302	791	18	73	387	14,155	1.9%
2017	9	6,283	103	2	6,322	109	307	800	19	76	397	14,417	1.8%
2018	10	6,426	109	2	6,408	110	311	809	19	79	406	14,679	1.8%
2019	11	6,569	115	2	6,493	111	316	818	20	82	416	14,940	1.8%
2020	12	6,711	121	2	6,578	112	320	826	21	85	425	15,202	1.8%
2021	13	6,865	127	2	6,658	113	325	834	22	89	437	15,472	1.8%
2022	14	7,019	134	2	6,738	114	329	842	23	92	449	15,743	1.7%
2023	15	7,173	140	2	6,818	115	333	850	24	96	461	16,013	1.7%
2024	16	7,327	146	3	6,898	116	338	858	25	100	474	16,283	1.7%
2025	17	7,481	152	3	6,978	117	342	865	26	104	486	16,553	1.7%
2026	18	7,635	158	3	7,057	118	347	873	27	108	498	16,823	1.6%
2027	19	7,789	165	3	7,137	119	351	881	27	112	510	17,094	1.6%
2028	20	7,943	171	3	7,217	120	355	889	28	115	522	17,364	1.6%

1. For years 2006 to 2028, the demographics are based on data from the Puget Sound Regional Council or PSRC (October 2007 data set). The PSRC data uses four demographic categories: 1) population, 2) single family households, 3) multifamily households, and 4) employment.
2. The North service area is served by the City's own wells.
3. The South service area is served by water the City purchases from Everett.
4. These demographics are associated with areas that are not currently in a pressure zone. They will be added to pressure zones as the City extends its infrastructure.

3. Production/Purchases and Peaking Factor

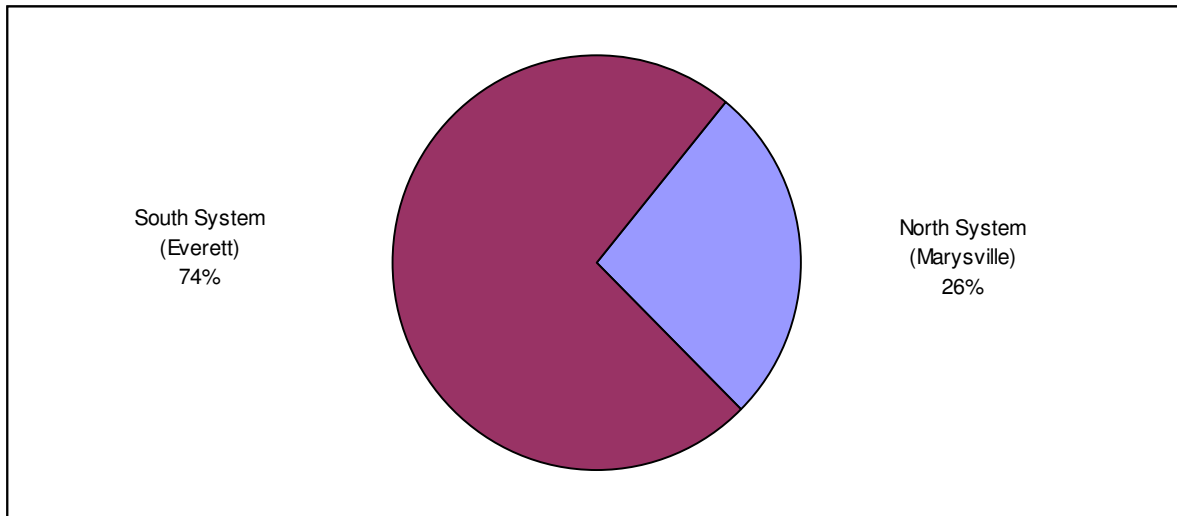
Table 3-1 Water Production/Purchases Summary 2004-2006 Average (mg)

2004-2006 Average (mg)								
Month	North System				South System		Total	
	Edward Springs	Stilly Well	Lake Goodwin Well	Subtotal	Everett Intertie	Subtotal	Qty	Percent
Jan	38	2	0	40	103	103	143	7%
Feb	33	2	0	35	91	91	126	6%
Mar	38	1	0	39	100	100	139	7%
Apr	37	3	0	41	100	100	141	7%
May	39	5	0	45	120	120	165	8%
Jun	36	12	0	49	128	128	177	9%
Jul	35	32	1	68	190	190	257	13%
Aug	33	33	1	67	172	172	239	12%
Sep	31	13	1	45	133	133	177	9%
Oct	35	4	1	39	128	128	167	8%
Nov	32	2	0	35	115	115	150	7%
Dec	33	2	0	36	117	117	153	8%
Total	420	112	5.6	538	1,495	1,495	2,033	100%
Percent	21%	6%	0.3%	26%	74%	74%	100%	

Data Source: "Marysville Water Production" spreadsheet provided by City staff.

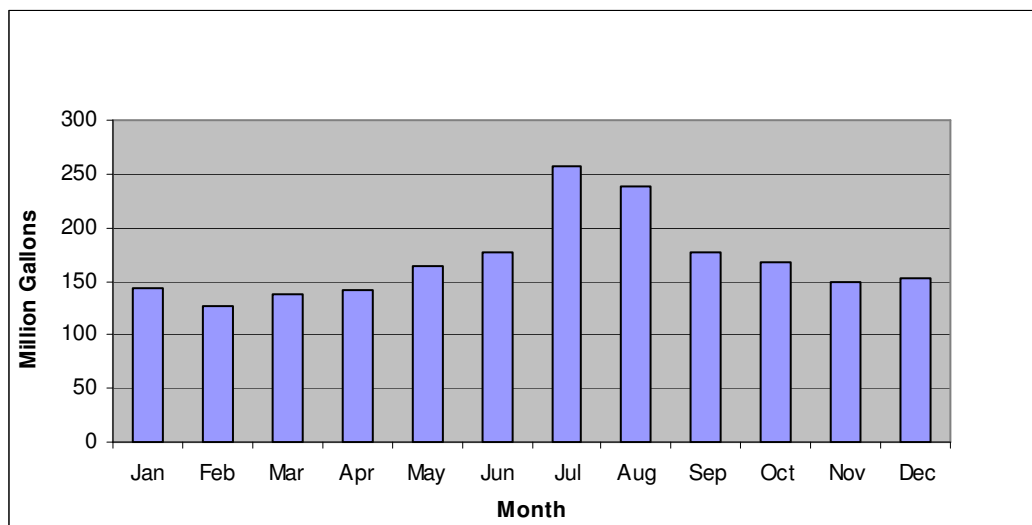
Nine years of production data was analyzed, however the average uses the most recent three years in order to focus on current trends.

Figure 3-1 Water Production/Purchases by Source (2004-2006 Average)



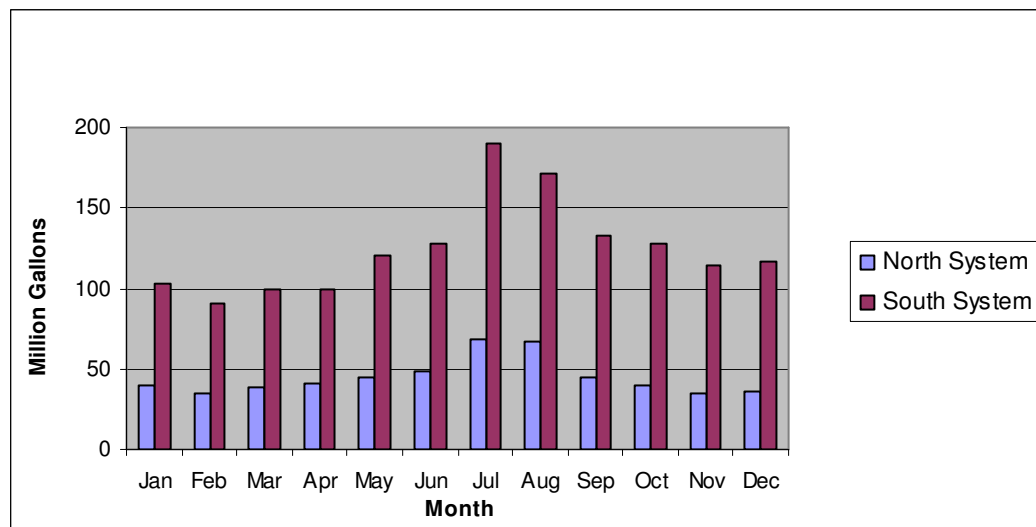
Data Source: "Marysville Water Production" spreadsheet provided by City staff.

Figure 3-2 Water Production/Purchases Monthly Distribution (2004-2006 Average)



Data Source: "Marysville Water Production" spreadsheet provided by City staff.

Figure 3-3 Water Production/Purchases Monthly Distribution By Source (2004-2006 Average)



Data Source: "Marysville Water Production" spreadsheet provided by City staff.

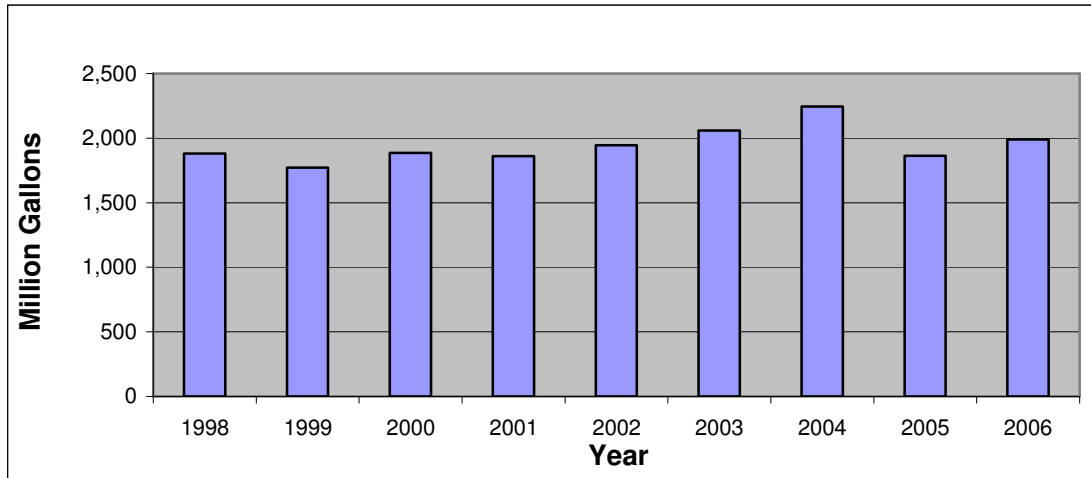
Table 3-2 Peaking Factor

Year	Average Day (mgd)	Peak Day		Peaking Factor
		(mgd)	Date	
2003	5.6	10.0	7/19/03	1.8
2004	6.2	9.8	8/14/04	1.6
2005	5.1	9.0	7/27/05	1.8
2006	5.5	9.6	7/26/06	1.8
2004-2006 Avg	5.57	9.44		1.7

Data Source: "Peak Water Day Production (2003-2007)" spreadsheet provided by City staff.

Data is presented for four years for which peak production history exists; however the average uses the most recent three years in order to focus on current trends.

Figure 3-4 Annual Production/Purchases (1998-2006)



Data Source: "Marysville Water Production" spreadsheet provided by City staff.

4. Sales, Customer Categories, Connections

Table 4-1 Sold and Wheeled Water 2004-2006 Annual Average (mg)

Customer Category															
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	Percent
1. Single Family	City ¹	19	58	19	42	18	60	26	90	37	63	22	44	499	26%
	Rural ²	42	40	41	29	43	38	59	54	77	47	46	30	547	29%
	Total	61	98	60	71	61	98	86	144	113	111	68	75	1,045	55%
2. Multifamily	City ¹	13	23	13	17	12	22	15	25	17	22	13	18	211	11%
	Rural ²	2	6	2	4	2	6	3	9	4	8	3	5	54	3%
	Total	15	29	15	21	15	28	18	34	21	30	16	23	264	14%
3. Commercial	City ¹	11	20	11	17	11	21	14	20	18	21	15	14	194	10%
	Rural ²	5	8	4	6	4	8	5	7	7	8	4	7	73	4%
	Total	16	29	15	23	15	29	19	28	25	29	19	21	267	14%
4. Schools	City ¹	2	3	2	2	2	2	3	2	3	3	2	2	27	1%
	Rural ²	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
	Total	2	3	2	2	2	2	3	2	3	3	2	2	27	1%
5. Irrigation	City ¹	0	0	0	0	0	2	3	11	10	6	2	1	35	2%
	Rural ²	0	0	0	0	0	0	0	4	1	4	0	0	9	0%
	Total	0	0	0	0	0	3	3	14	10	10	3	1	45	2%
6. Snohomish PUD - Wheeled Water		11	10	10	11	13	13	17	16	13	12	11	10	147	8%
	Total	11	10	10	11	13	13	17	16	13	12	11	10	147	8%
7. Tulalip Tribe - Wheeled Water		5	5	6	7	10	11	21	22	13	6	7	5	119	6%
	Total	5	5	6	7	10	11	21	22	13	6	7	5	119	6%
Total	City ¹	44	105	45	78	43	108	61	149	85	116	54	79	966	50%
	Rural ²	50	54	47	39	49	52	68	73	88	67	53	42	683	36%
	Wheeled ³	16	15	16	18	23	24	38	38	26	18	18	15	266	14%
	Total	110	175	108	135	115	183	167	260	199	201	125	137	1,915	100%
Percent		6%	9%	6%	7%	6%	10%	9%	14%	10%	10%	7%	7%	100%	

Data Source: "Billed Revenue" by Year and "Consumption and Usage by Classification and Rate code" spreadsheets provided by City staff.

Five years of sales data was analyzed, however the average uses the most recent three years in order to focus on current trends.

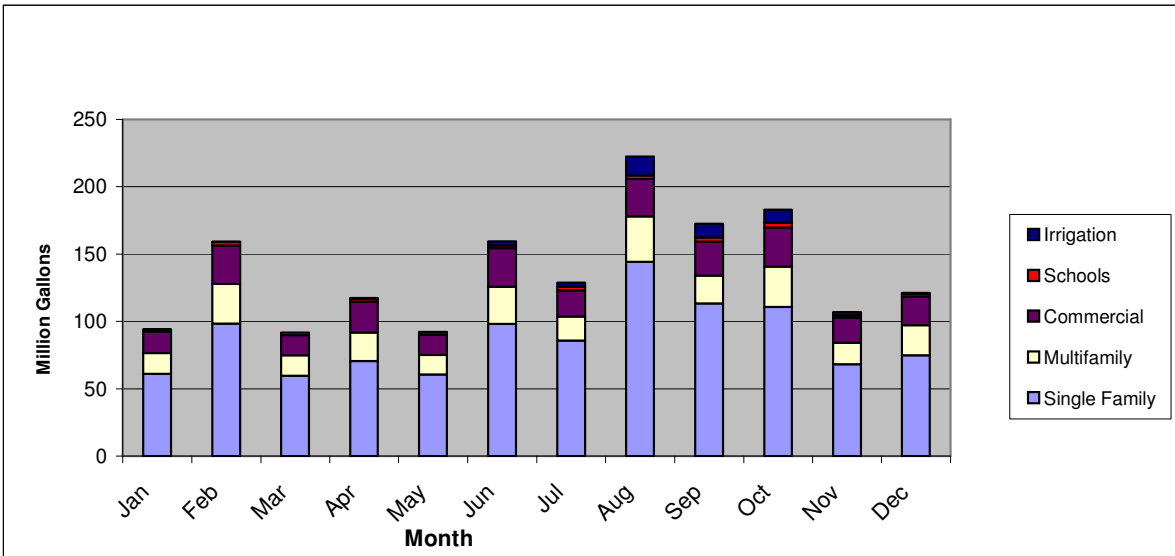
The monthly distribution of actual water use may differ somewhat from this representation since billing numbers are based on meter read dates and many meters are read bi-monthly.

1. Sales to customers within the City Limits.

2. Sales to customers outside the City Limits.

3. Wheeled water to Snohomish PUD and Tulalip Tribe.

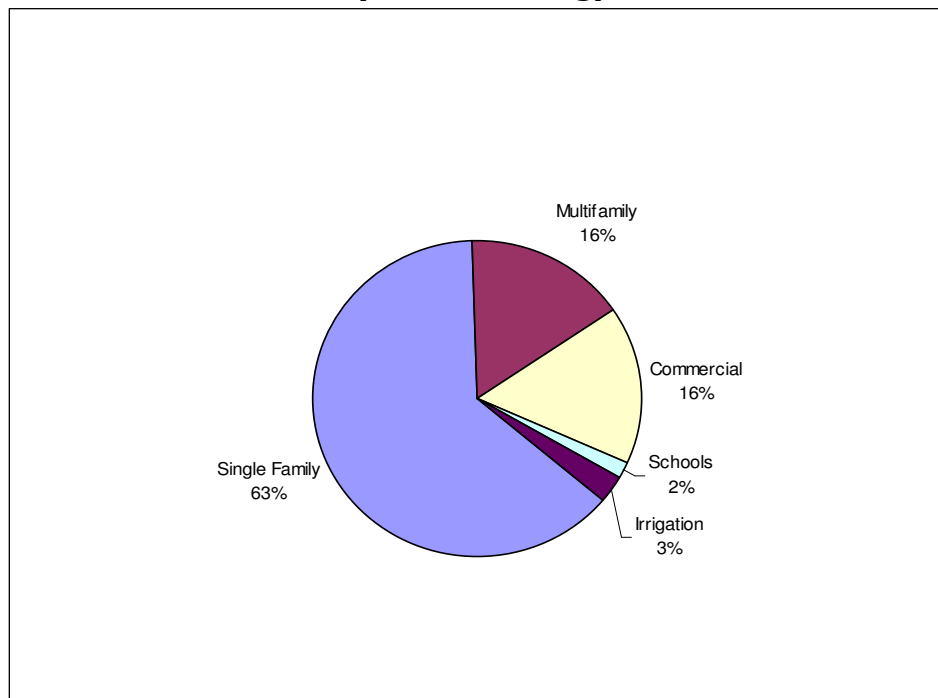
**Figure 4-1 Water Billings Monthly Distribution – Retail Only
(2004-2006 Avg)**



The monthly distribution of actual water use may differ somewhat from this representation since billing numbers are based on meter read dates and many meters are read bi-monthly.

Data Source: "Billed Revenue" by Year and "Consumption and Usage by Classification and Rate code" spreadsheets provided by City staff.

**Figure 4-2 Water Sales by Customer Category – Retail Only
(2004-2006 Avg)**



**Table 4-2 Connections and Sales Comparison – Retail Only
(2004-2006 Avg)**

Customer Category	Connections ¹	% Connections	Sales (mg) ²	% Sales
Single Family	15,241	88.9%	1,045	63%
Multifamily	845	4.9%	264	16%
Commercial	831	4.9%	267	16%
Schools	45	0.3%	27	2%
Irrigation	106	0.6%	45	3%
Total	17,136	100%	1,649	100%

1. Data Source: "Consumption and Usage by Classification and Rate Code" spreadsheet provided by City staff.

2. Data Source: "Billed Revenue" by Year and "Consumption and Usage by Classification and Rate code" spreadsheets provided by City staff.

**Figure 4-3 Connections and Sales Comparison – Retail Only
(2004-2006 Avg)**

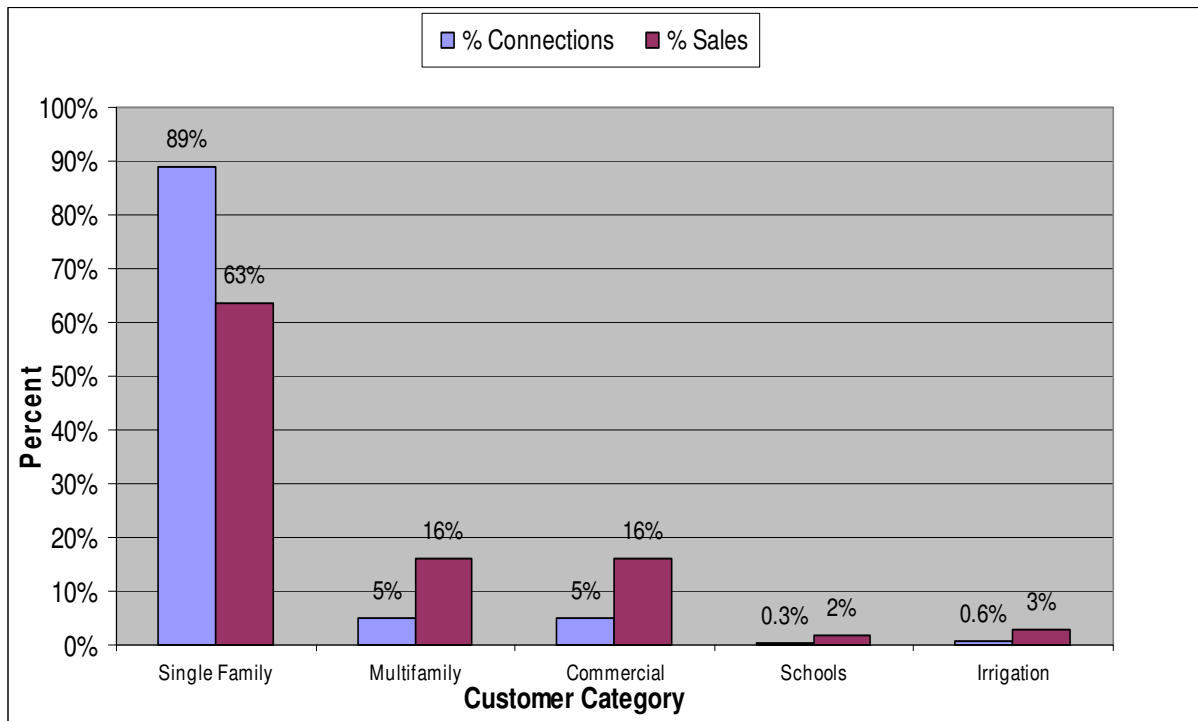


Table 4-3 Largest Sites (2005-2006 Average Sales in mg)¹

#	Name	Customer Type	Total
1	Pacific Coast Feather Co	Commercial	16.8
2	City of Marysville	Commercial	9.5
3	Commanding Officer	Commercial	8.3
4	National Food Corp	Commercial	7.2
6	City of Marysville	Commercial	6.6
7	Smokey Point Mobile Park	Multi-Family	5.6
8	National Food Corp	Commercial	5.1
9	Glenwood Mobile Estates	Multi-Family	4.7
10	Midway Garden Mobile Park	Multi-Family	4.3
11	Klein, John & Jim	Multi-Family	4.1
12	L155-1 Eagle Point LLC	Multi-Family	3.9
13	Windsor Square Apartments	Multi-Family	3.8
14	Greenman III, Robert F	Multi-Family	3.3
Total			83.3

1. This list was compiled from the 10 largest sites for 2004, 2005, and 2006. This summary has more than 10 sites since the same sites did not make the top 10 list each year.

Data source: "Top Consumption by Site 2004", "Top Consumption by Site 2005" and "Top Consumption by Site 2006" spreadsheets provided by City staff.

5. Water Balance, Leakage, Non-Revenue Water

Table 5-1 Water Balance 2006

	Level 1	Level 2	Level 3	Volume (mg)	% of Produced and Purchased Water
Water Produced and/or Purchased	Revenue Water	Billed Authorized Consumption	1. Billed Water Exported	0 ¹	0%
			2. Billed Metered Consumption	1,651 ³	83%
			3. Billed Unmetered Consumption	0	0%
	Non-Revenue Water	Unbilled Authorized Consumption	4. Unbilled Metered Consumption	291 ²	15%
			5. Unbilled Unmetered Consumption	9 ⁴	0.5%
		Apparent Losses	6. Unauthorized Consumption	0	0%
			7. Customer Metering Inaccuracies	0	0%
		Real Losses	8. Known Leakage	0	0%
			9. Assumed Leakage	39 ⁵	2%
TOTAL				1,990 ⁶	100%

1. Marysville historically had an agreement to export water to the City of Arlington, however the Arlington Intertie was deactivated in 2005.
2. This is the water wheeled to the Tulalip Tribes and Snohomish PUD. Since this water is only wheeled through Marysville's pipes, but is not billed by Marysville, it is considered "unbilled metered consumption".
3. Data Source: "Consumption and Usage by Classification and Rate Code" spreadsheets provided by City staff.
4. Estimated use as follows: 9.3 mg high volume flushing.
5. Water Production minus all other categories.
6. From "Marysville Water Production" spreadsheet provided by City staff.

Table 5-2 Distribution System Leakage and "Retail" Non-Revenue Water (mg)

Year	Water Produced/Purchased ¹	Authorized Consumption				Distribution System Leakage ⁴		"Retail" Non-Revenue Water ⁵	
		Billed Consumption ²	Unbilled Consumption			Qty	Percent of Production	Qty	Percent of Billed Consumption
			PUD and Tulalip Wheeled Water	Other ³	Total				
2003	2,059	1,697	198	10	208	153	7%	163	9.6%
2004	2,245	1,680	261	10	272	293	13%	303	18.0%
2005	1,863	1,546	246	9	255	63	3%	71	4.6%
2006	1,990	1,651	291	9	300	39	2%	48	2.9%
2004-2006 Average⁶	2,033	1,626	266	9	276	131	6.1%	141	9%

1. Data Source: "Marysville Water Production" spreadsheet provided by City staff.

2. Data Source: "Consumption and Usage by Classification and Rate Code" spreadsheets provided by City staff.

3. This category represents any unbilled authorized consumption aside from the wheeled water such as flushing, firefighting, etc. For 2006, City staff documented flushing usage ("2006 High Volume Flushing") at 9.3 mg. Flushing water was estimated for the other year using the 2006 ratio of flushing water to water production/purchases.

4. Distribution system leakage is defined in the new Water Use Efficiency Rule as water production and purchases minus authorized consumption.

5. This represents the non-revenue water that is used in the retail service area. The calculation is the water production and purchases minus the billed consumption and the PUD and Tulalip wheeled water. These numbers are used to develop the retail non-revenue portion of the demand forecast.

6. Data is presented for four years to show a lengthy history; however the average uses the most recent three years to focus on current trends.

6. Water Use Factors and ERUs

Table 6-1 Water Use Factors and ERUs (2004-2006 Avg)

Customer Category	Sales (gpd) ²	Households or Employees	Sales Per Household or Employee (gpd)	Number of ERUs
Single Family	2,864,212	15,241 ³	188	15,241
Multifamily	724,208	4,526 ⁴	160 ⁶	3,852
Non-Residential ¹	929,038	10,378 ⁵	90	4,942

1. This includes the following customer categories: commercial, schools, and irrigation.

2. Data Source: "Billed Revenue" by Year and "Consumption and Usage by Classification and Rate code" spreadsheets provided by City staff.

3. Assumed to be the same as the number as single family connections.

4. This number is the result of the actual multifamily sales divided by the estimated multifamily water use factor. See footnote #6 for more information.

5. Based on data in the demographics analysis. For 2006 10,482 employees were estimated. Back-calculated the number of employees for 2004 and 2005 (using 1.0% annual growth rates). Then calculated a 2004-2006 average.

6. Estimated to be 85% of the single family water use factor. An analysis dividing the actual multifamily sales by an initial estimate of the number of multifamily households (MF HH) resulted in an unrealistically high multifamily water use factor (248 gpd). Since it is believed the sales numbers are correct, it is assumed the initial MF HH estimate was incorrect. New MF HH estimates were developed based on the estimated multifamily water use factor.

7. Demand Forecast Results

Table 7-1 Demand Forecast – Total System (without additional conservation)

Calendar Year	Plan Year	Demographics ¹			Water Use Factors (gpd) ²			Demand ¹³									
								Average Day Demand (ADD gpd)								Maximum Day Demand (MDD gpd) ¹²	
		Single Family Households (SF HH)	Multifamily Households (MF HH)	Employees	Per SF HH	Per MF HH	Per Employee	Retail					Tulalip Tribes ⁹	Snohomish PUD ¹⁰	Total ¹¹		
								Single Family (SF) ³	Multifamily (MF) ⁴	Non-Residential (NR) ⁵	Subtotal Sales ⁶	Non-Revenue ⁷					Subtotal ⁸
2003	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2,962,255	767,326	920,249	4,649,830	446,882	5,096,712	273,425	269,589	5,639,726	10,036,000
2004	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2,934,422	761,460	908,016	4,603,899	830,348	5,434,247	327,945	387,945	6,150,137	9,771,000
2005	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2,728,811	692,986	813,868	4,235,666	195,841	4,431,507	284,932	388,767	5,105,205	8,989,000
2006	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2,929,403	718,178	876,318	4,523,899	131,444	4,655,342	367,671	429,315	5,452,329	9,561,000
2007	n/a	15,861	4,670	10,623	188	160	90	2,981,779	747,145	956,098	4,685,022	398,227	5,083,249	581,203	507,371	6,171,823	9,730,098
2008	n/a	16,182	4,746	10,765	188	160	90	3,042,226	759,438	968,824	4,770,488	405,491	5,175,979	918,748	599,618	6,694,345	10,317,531
2009	1	18,880	4,978	12,385	188	160	90	3,549,480	796,549	1,114,621	5,460,649	464,155	5,924,804	1,452,329	708,636	8,085,770	12,233,133
2010	2	18,937	5,466	12,555	188	160	90	3,560,221	874,618	1,129,915	5,564,753	473,004	6,037,758	2,295,797	837,476	9,171,031	13,397,461
2011	3	19,427	5,583	12,814	188	160	90	3,652,305	893,278	1,153,294	5,698,877	484,405	6,183,281	3,629,126	989,741	10,802,148	15,130,445
2012	4	19,917	5,700	13,074	188	160	90	3,744,389	911,938	1,176,673	5,833,000	495,805	6,328,805	4,090,000	1,169,690	11,588,495	16,018,658
2013	5	20,407	5,816	13,334	188	160	90	3,836,473	930,598	1,200,051	5,967,123	507,205	6,474,328	4,090,000	1,382,356	11,946,684	16,478,714
2014	6	20,897	5,933	13,594	188	160	90	3,928,557	949,258	1,223,430	6,101,246	518,606	6,619,852	4,090,000	1,633,688	12,343,539	16,977,435
2015	7	22,718	6,074	13,894	188	160	90	4,271,037	971,809	1,250,433	6,493,279	551,929	7,045,208	4,090,000	1,930,715	13,065,923	17,997,568
2016	8	23,258	6,191	14,155	188	160	90	4,372,527	990,604	1,273,985	6,637,116	564,155	7,201,271	4,090,000	2,281,746	13,573,017	18,613,907
2017	9	23,798	6,309	14,417	188	160	90	4,474,017	1,009,398	1,297,538	6,780,954	576,381	7,357,335	4,090,000	2,696,599	14,143,934	19,294,068
2018	10	24,338	6,426	14,679	188	160	90	4,575,508	1,028,193	1,321,090	6,924,791	588,607	7,513,398	4,090,000	3,186,878	14,790,276	20,049,655
2019	11	24,878	6,544	14,940	188	160	90	4,676,998	1,046,988	1,344,643	7,068,628	600,833	7,669,462	4,090,000	3,420,000	15,179,462	20,548,085
2020	12	25,107	7,060	15,202	188	160	90	4,720,030	1,129,545	1,368,195	7,217,770	613,510	7,831,280	4,090,000	3,420,000	15,341,280	20,823,176
2021	13	25,632	7,195	15,472	188	160	90	4,818,874	1,151,158	1,392,513	7,362,544	625,816	7,988,360	4,090,000	3,420,000	15,498,360	21,090,212
2022	14	26,158	7,330	15,743	188	160	90	4,917,718	1,172,770	1,416,830	7,507,318	638,122	8,145,440	4,090,000	3,420,000	15,655,440	21,357,248
2023	15	26,684	7,465	16,013	188	160	90	5,016,562	1,194,383	1,441,148	7,652,092	650,428	8,302,520	4,090,000	3,420,000	15,812,520	21,624,284
2024	16	27,210	7,600	16,283	188	160	90	5,115,406	1,215,996	1,465,465	7,796,867	662,734	8,459,600	4,090,000	3,420,000	15,969,600	21,891,320
2025	17	27,735	7,735	16,553	188	160	90	5,214,250	1,237,608	1,489,783	7,941,641	675,039	8,616,680	4,090,000	3,420,000	16,126,680	22,158,356
2026	18	28,261	7,870	16,823	188	160	90	5,313,094	1,259,221	1,514,100	8,086,415	687,345	8,773,760	4,090,000	3,420,000	16,283,760	22,425,392
2027	19	28,787	8,005	17,094	188	160	90	5,411,938	1,280,834	1,538,418	8,231,189	699,651	8,930,840	4,090,000	3,420,000	16,440,840	22,692,428
2028	20	29,212	8,140	17,364	188	160	90	5,491,803	1,302,446	1,562,735	8,356,984	710,344	9,067,328	4,090,000	3,420,000	16,577,328	22,924,457

1. From the demographics tables.

2. From the water use factors table.

3. The number of single family households multiplied by the water use per single family household.

4. The number of multifamily households multiplied by the water use per multifamily household.

5. The number of employees multiplied by the water use per employee.

6. The sum of the SF, MF, and Non-Residential demands.

7. The sum of the SF, MF, and Non-Residential demands multiplied by the percent of "retail non-revenue water" as a percent of sales. (Note this is intentionally different than non-revenue as a percent of production.) Also note that actual non-revenue water decreased significantly between 2004 and 2005, which according to Marysville staff was due to fixing a large leak under the slough.

8. The sum of the SF, MF, and Non-Residential demands plus the non-revenue water.

9. The Tulalip Tribes demands were developed by increasing actual demands by twice the highest annual growth rate in recent years. The highest annual growth rate in recent years was 29%. Therefore, the 2006 actual demands were increased by 58%. Each subsequent year was then increased by 58%, until the Tribes full JOA allotment of 4,090,000 gpd was reached in 2012. The demands were then held constant for the remaining years.

10. The PUD demands were developed by increasing actual demands by the most recent 3-year average annual growth rate. The 2004 to 2006 average annual growth rate was 18%. Therefore, the 2006 actual demands were increased by 18%. Each subsequent year was then increased by 18%, until the PUD's full JOA allotment of 3,420,000 gpd was reached in 2019. The demands were then held constant for the remaining years.

11. The sum of the retail subtotal, plus the Tulalip Tribes and Snohomish PUD water.

12. A peaking factor of 1.7 (which is the 2004-2006 average peaking factor) is applied to the retail portion of the average day demand. For 2003-2006, the actual peak day production number is used.

13. Numbers for 2003-2006 are actuals.

Figure 7-1 Demand Forecast Summary (without additional conservation)

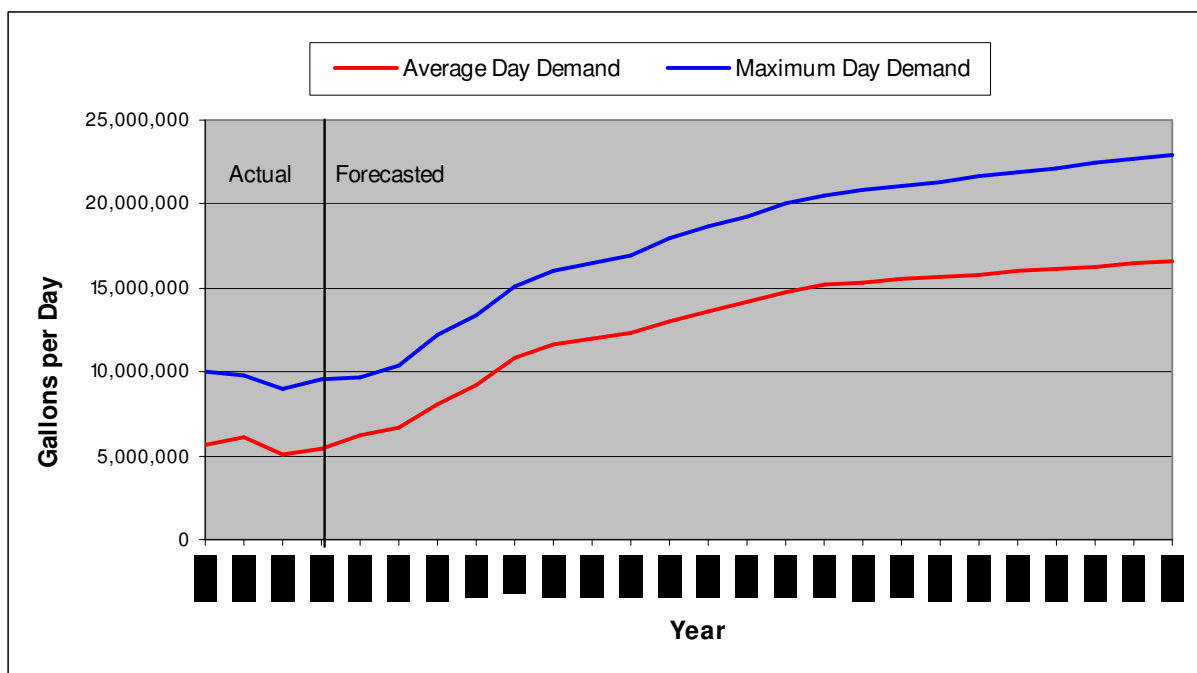


Figure 7-2 Demand Forecast ADD Details (without additional conservation)

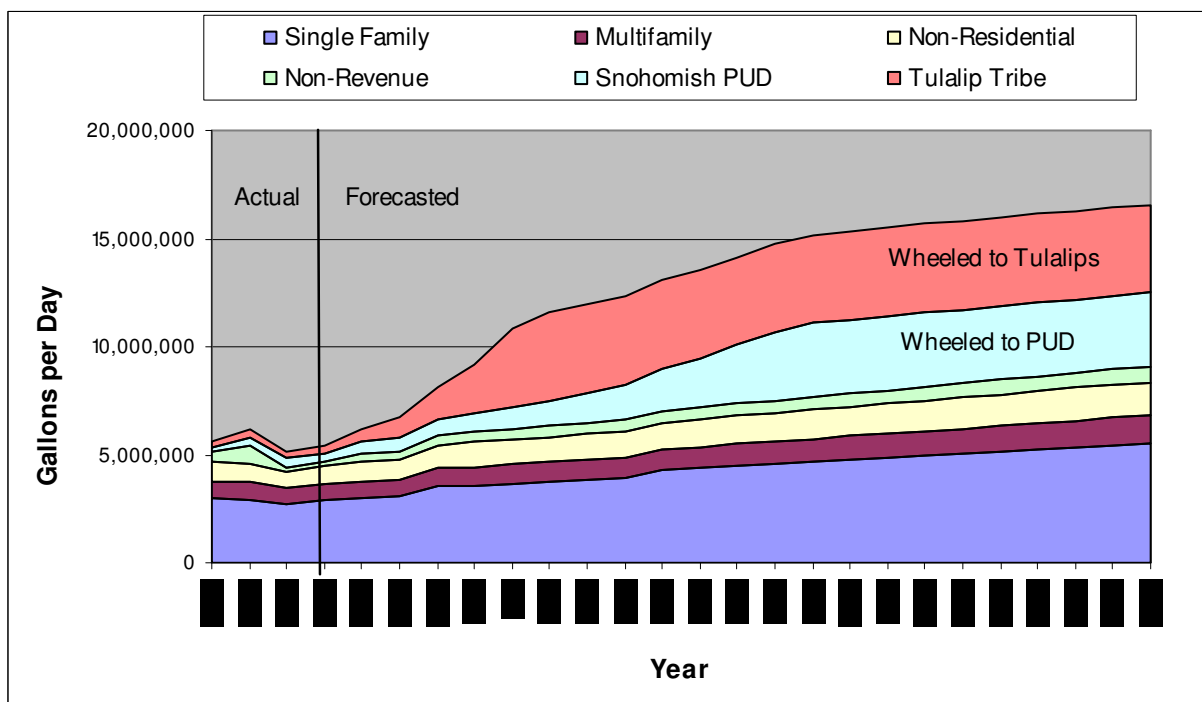


Table 7-2 Demand Forecast – Total System (with additional conservation)

Calendar Year	Plan Year	Demographics ¹			Water Use Factors (gpd) ²			Demand ¹³									
								Average Day Demand (ADD gpd)								Maximum Day Demand (MDD gpd) ¹²	
		Single Family Households (SF HH)	Multi-family Households (MF HH)	Employees	Per SF HH	Per MF HH	Per Employee	Retail					Tulalip Tribes ⁹	Snohomish PUD ¹⁰	Total ¹¹		
								Single Family (SF) ³	Multifamily (MF) ⁴	Non-Residential (NR) ⁵	Subtotal Sales ⁶	Non-Revenue ⁷					Subtotal ⁸
2003	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2,962,255	767,326	920,249	4,649,830	446,882	5,096,712	273,425	269,589	5,639,726	10,036,000
2004	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2,934,422	761,460	908,016	4,603,899	830,348	5,434,247	327,945	387,945	6,150,137	9,771,000
2005	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2,728,811	692,986	813,868	4,235,666	195,841	4,431,507	284,932	388,767	5,105,205	8,989,000
2006	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2,929,403	718,178	876,318	4,523,899	131,444	4,655,342	367,671	429,315	5,452,329	9,561,000
2007	n/a	15,861	4,670	10,623	188.0	160.0	90.0	2,981,779	747,145	956,098	4,685,022	398,227	5,083,249	581,203	507,371	6,171,823	9,730,098
2008	n/a	16,182	4,746	10,765	188.0	160.0	90.0	3,042,226	759,438	968,824	4,770,488	405,491	5,175,979	918,748	599,618	6,694,345	10,317,531
2009	1	18,880	4,978	12,385	185.9	158.2	89.0	3,510,615	787,827	1,102,417	5,400,859	459,073	5,859,932	1,452,329	708,636	8,020,898	12,122,850
2010	2	18,937	5,466	12,555	185.5	157.9	88.8	3,512,817	862,973	1,114,870	5,490,659	466,706	5,957,366	2,295,797	837,476	9,090,639	13,260,795
2011	3	19,427	5,583	12,814	185.1	157.5	88.6	3,595,607	879,411	1,135,390	5,610,409	476,885	6,087,293	3,629,126	989,741	10,706,160	14,967,266
2012	4	19,917	5,700	13,074	184.7	157.2	88.4	3,678,551	895,903	1,155,983	5,730,438	487,087	6,217,525	4,090,000	1,169,690	11,477,215	15,829,482
2013	5	20,407	5,816	13,334	184.4	156.9	88.3	3,762,056	912,547	1,176,774	5,851,377	497,367	6,348,744	4,090,000	1,382,356	11,821,100	16,265,220
2014	6	20,897	5,933	13,594	184.0	156.6	88.1	3,845,540	929,198	1,197,577	5,972,316	507,647	6,479,962	4,090,000	1,633,688	12,203,650	16,739,624
2015	7	22,718	6,074	13,894	184.0	156.6	88.1	4,180,782	951,273	1,224,009	6,356,065	540,265	6,896,330	4,090,000	1,930,715	12,917,045	17,744,476
2016	8	23,258	6,191	14,155	184.0	156.6	88.1	4,280,128	969,671	1,247,064	6,496,862	552,233	7,049,096	4,090,000	2,281,746	13,420,841	18,355,208
2017	9	23,798	6,309	14,417	184.0	156.6	88.1	4,379,474	988,068	1,270,119	6,637,660	564,201	7,201,861	4,090,000	2,696,599	13,988,460	19,029,763
2018	10	24,338	6,426	14,679	184.0	156.6	88.1	4,478,819	1,006,465	1,293,173	6,778,458	576,169	7,354,627	4,090,000	3,186,878	14,631,505	19,779,744
2019	11	24,878	6,544	14,940	184.0	156.6	88.1	4,578,165	1,024,863	1,316,228	6,919,256	588,137	7,507,393	4,090,000	3,420,000	15,017,393	20,272,567
2020	12	25,107	7,060	15,202	184.0	156.6	88.1	4,620,287	1,105,676	1,339,283	7,065,246	600,546	7,665,792	4,090,000	3,420,000	15,175,792	20,541,846
2021	13	25,632	7,195	15,472	184.0	156.6	88.1	4,717,042	1,126,832	1,363,086	7,206,961	612,592	7,819,552	4,090,000	3,420,000	15,329,552	20,803,239
2022	14	26,158	7,330	15,743	184.0	156.6	88.1	4,813,798	1,147,988	1,386,890	7,348,675	624,637	7,973,313	4,090,000	3,420,000	15,483,313	21,064,632
2023	15	26,684	7,465	16,013	184.0	156.6	88.1	4,910,553	1,169,143	1,410,694	7,490,390	636,683	8,127,073	4,090,000	3,420,000	15,637,073	21,326,025
2024	16	27,210	7,600	16,283	184.0	156.6	88.1	5,007,308	1,190,299	1,434,497	7,632,105	648,729	8,280,834	4,090,000	3,420,000	15,790,834	21,587,418
2025	17	27,735	7,735	16,553	184.0	156.6	88.1	5,104,064	1,211,455	1,458,301	7,773,820	660,775	8,434,595	4,090,000	3,420,000	15,944,595	21,848,811
2026	18	28,261	7,870	16,823	184.0	156.6	88.1	5,200,819	1,232,611	1,482,105	7,915,535	672,820	8,588,355	4,090,000	3,420,000	16,098,355	22,110,204
2027	19	28,787	8,005	17,094	184.0	156.6	88.1	5,297,574	1,253,767	1,505,908	8,057,250	684,866	8,742,116	4,090,000	3,420,000	16,252,116	22,371,597
2028	20	29,212	8,140	17,364	184.0	156.6	88.1	5,375,751	1,274,923	1,529,712	8,180,386	695,333	8,875,719	4,090,000	3,420,000	16,385,719	22,598,723

1. From the demographics tables.

2. For 2007-2008, from the water use factor table. For 2009-2014, the water use factor are reduced to match the estimated savings from Marysville's 2009-2014 conservation program. For 2015-2028, held constant since conservation savings beyond 2014 have not be identified.

3. The number of single family households multiplied by the water use per single family household.

4. The number of multifamily households multiplied by the water use per multifamily household.

5. The number of employees multiplied by the water use per employee.

6. The sum of the SF, MF, and Non-Residential demands.

7. The sum of the SF, MF, and Non-Residential demands multiplied by the percent of "retail non-revenue water" as a percent of sales. (Note this is intentionally different than non-revenue as a percent of production.) Also note that actual non-revenue wat

8. The sum of the SF, MF, and Non-Residential demands plus the non-revenue water.

9. The Tulalip Tribes demands were developed by increasing actual demands by twice the highest annual growth rate in recent years. The highest annual growth rate in recent years was 29%. Therefore, the 2006 actual demands were increased by 58%. Each subsequent year was then increased by 58%, until the Tribes full JOA allotment of 4,090,000 gpd was reached in 2012. The demands were then held constant for the remaining years.

10. The PUD demands were developed by increasing actual demands by the most recent 3-year average annual growth rate. The 2004 to 2006 average annual growth rate was 18%. Therefore, the 2006 actual demands were increased by 18%. Each subsequent year was then increased by 18%, until the PUD's full JOA allotment of 3,420,000 gpd was reached in 2019. The demands were then held constant for the remaining years.

11. The sum of the retail subtotal, plus the Tulalip Tribes and Snohomish PUD water.

12. A peaking factor of 1.7 (which is the 2004-2006 average peaking factor) is applied to the retail portion of the average day demand. For 2003-2006, the actual peak day production number is used.

13. Numbers for 2003-2006 are actuals.

Table 7-3 Demand Forecast – Pressure Zone 170 (without additional conservation)

Calendar Year	Plan Year	Demographics ¹			Water Use Factors (gpd) ²			Demand						
								Average Day Demand (ADD gpd)						Maximum Day Demand (MDD gpd) ⁹
		Single Family Households (SF HH)	Multifamily Households (MF HH)	Employees	Per SF HH	Per MF HH	Per Employee	Single Family (SF) ³	Multifamily (MF) ⁴	Non-Residential (NR) ⁵	Subtotal ⁶	Non-Revenue ⁷	Total ⁸	
2003	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2004	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2005	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2006	n/a	5,711	3,609	5,521	188	160	90	1,073,733	577,459	496,915	2,148,107	62,414	2,210,522	3,876,288
2007	n/a	5,802	3,667	5,572	188	160	90	1,090,806	586,650	501,507	2,178,963	185,212	2,364,175	4,019,097
2008	n/a	5,893	3,724	5,623	188	160	90	1,107,879	595,841	506,099	2,209,818	187,835	2,397,653	4,076,010
2009	1	5,984	3,781	5,674	188	160	90	1,124,954	605,032	510,691	2,240,677	190,458	2,431,134	4,132,928
2010	2	5,886	4,081	5,725	188	160	90	1,106,556	652,908	515,282	2,274,746	193,353	2,468,099	4,195,769
2011	3	6,005	4,165	5,811	188	160	90	1,129,026	666,353	522,955	2,318,335	197,058	2,515,393	4,276,168
2012	4	6,125	4,249	5,896	188	160	90	1,151,496	679,799	530,628	2,361,923	200,763	2,562,686	4,356,567
2013	5	6,245	4,333	5,981	188	160	90	1,173,966	693,244	538,301	2,405,511	204,468	2,609,980	4,436,966
2014	6	6,364	4,417	6,066	188	160	90	1,196,436	706,689	545,974	2,449,100	208,173	2,657,273	4,517,365
2015	7	6,493	4,501	6,152	188	160	90	1,220,775	720,189	553,666	2,494,631	212,044	2,706,674	4,601,347
2016	8	6,613	4,585	6,237	188	160	90	1,243,310	733,637	561,340	2,538,287	215,754	2,754,041	4,681,870
2017	9	6,733	4,669	6,322	188	160	90	1,265,845	747,084	569,014	2,581,943	219,465	2,801,408	4,762,393
2018	10	6,853	4,753	6,408	188	160	90	1,288,379	760,531	576,688	2,625,598	223,176	2,848,774	4,842,916
2019	11	6,973	4,837	6,493	188	160	90	1,310,914	773,978	584,362	2,669,254	226,887	2,896,141	4,923,440
2020	12	6,835	5,251	6,578	188	160	90	1,285,047	840,212	592,036	2,717,296	230,970	2,948,266	5,012,052
2021	13	6,964	5,351	6,658	188	160	90	1,309,224	856,167	599,224	2,764,615	234,992	2,999,607	5,099,332
2022	14	7,093	5,451	6,738	188	160	90	1,333,401	872,121	606,412	2,811,934	239,014	3,050,948	5,186,612
2023	15	7,221	5,550	6,818	188	160	90	1,357,578	888,075	613,599	2,859,253	243,037	3,102,290	5,273,892
2024	16	7,350	5,650	6,898	188	160	90	1,381,755	904,030	620,787	2,906,572	247,059	3,153,631	5,361,172
2025	17	7,478	5,750	6,978	188	160	90	1,405,932	919,984	627,975	2,953,891	251,081	3,204,972	5,448,453
2026	18	7,607	5,850	7,057	188	160	90	1,430,109	935,938	635,163	3,001,211	255,103	3,256,313	5,535,733
2027	19	7,736	5,949	7,137	188	160	90	1,454,286	951,893	642,351	3,048,530	259,125	3,307,655	5,623,013
2028	20	7,864	6,049	7,217	188	160	90	1,478,463	967,847	649,539	3,095,849	263,147	3,358,996	5,710,293

1. From the demographics tables.

2. From the water use factor table.

3. The number of single family households multiplied by the water use per single family household.

4. The number of multifamily households multiplied by the water use per multifamily household.

5. The number of employees multiplied by the water use per employee.

6. The sum of the SF, MF, and Non-Residential demands.

7. The sum of the SF, MF, and Non-Residential demands multiplied by the percent of "retail non-revenue water" as a percent of sales. (Note this is intentionally different than non-revenue as a percent of production.)

8. The sum of the SF, MF, and Non-Residential demands plus the non-revenue water.

9. The total average day demand multiplied by a peaking factor of 1.7 which is the 2004-2006 average peaking factor. For 2006, the actual peak day production number is used.

Table 7-4 Demand Forecast – Pressure Zone 203 (without additional conservation)

Calendar Year	Plan Year	Demographics ¹			Water Use Factors (gpd) ²			Demand						
								Average Day Demand (ADD gpd)						Maximum Day Demand (MDD gpd) ⁹
		Single Family Households (SF HH)	Multi family Households (MF HH)	Employees	Per SF HH	Per MF HH	Per Employee	Single Family (SF) ³	Multifamily (MF) ⁴	Non-Residential (NR) ⁵	Subtotal ⁶	Non-Revenue ⁷	Total ⁸	
2003	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2004	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2005	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2006	n/a	121	34	100	188	160	90	22,806	5,487	8,980	37,272	1,083	38,355	67,258
2007	n/a	123	34	100	188	160	90	23,158	5,487	9,010	37,654	3,201	40,855	69,453
2008	n/a	125	35	100	188	160	90	23,509	5,657	9,040	38,206	3,248	41,454	70,471
2009	1	127	36	101	188	160	90	23,861	5,741	9,071	38,673	3,287	41,960	71,333
2010	2	126	39	101	188	160	90	23,766	6,314	9,101	39,181	3,330	42,511	72,269
2011	3	129	40	102	188	160	90	24,238	6,440	9,199	39,877	3,390	43,267	73,553
2012	4	131	41	103	188	160	90	24,711	6,566	9,296	40,574	3,449	44,022	74,838
2013	5	134	42	104	188	160	90	25,184	6,692	9,394	41,270	3,508	44,778	76,123
2014	6	136	43	105	188	160	90	25,657	6,818	9,491	41,967	3,567	45,534	77,407
2015	7	139	43	107	188	160	90	26,129	6,945	9,589	42,663	3,626	46,289	78,692
2016	8	142	44	108	188	160	90	26,602	7,071	9,687	43,359	3,686	47,045	79,976
2017	9	144	45	109	188	160	90	27,075	7,197	9,784	44,056	3,745	47,801	81,261
2018	10	147	46	110	188	160	90	27,548	7,323	9,882	44,752	3,804	48,556	82,546
2019	11	149	47	111	188	160	90	28,020	7,449	9,979	45,449	3,863	49,312	83,830
2020	12	148	52	112	188	160	90	27,851	8,276	10,077	46,203	3,927	50,131	85,222
2021	13	151	53	113	188	160	90	28,377	8,432	10,165	46,974	3,993	50,967	86,644
2022	14	154	54	114	188	160	90	28,903	8,589	10,253	47,745	4,058	51,803	88,065
2023	15	157	55	115	188	160	90	29,429	8,745	10,341	48,515	4,124	52,639	89,487
2024	16	159	56	116	188	160	90	29,955	8,902	10,430	49,286	4,189	53,475	90,908
2025	17	162	57	117	188	160	90	30,481	9,058	10,518	50,057	4,255	54,312	92,330
2026	18	165	58	118	188	160	90	31,007	9,214	10,606	50,827	4,320	55,148	93,751
2027	19	168	59	119	188	160	90	31,533	9,371	10,694	51,598	4,386	55,984	95,173
2028	20	171	60	120	188	160	90	32,059	9,527	10,783	52,369	4,451	56,820	96,594

1. From the demographics tables.

2. From the water use factor table.

3. The number of single family households multiplied by the water use per single family household.

4. The number of multifamily households multiplied by the water use per multifamily household.

5. The number of employees multiplied by the water use per employee.

6. The sum of the SF, MF, and Non-Residential demands.

7. The sum of the SF, MF, and Non-Residential demands multiplied by the percent of "retail non-revenue water" as a percent of sales. (Note this is intentionally different than non-revenue as a percent of production.)

8. The sum of the SF, MF, and Non-Residential demands plus the non-revenue water.

9. The total average day demand multiplied by a peaking factor of 1.7 which is the 2004-2006 average peaking factor. For 2006, the actual peak day production number is used.

Table 7-5 Demand Forecast – Pressure Zone 240 – North (without additional conservation)

Calendar Year	Plan Year	Demographics ¹			Water Use Factors (gpd) ²			Demand						
								Average Day Demand (ADD gpd)						Maximum Day Demand (MDD gpd) ⁹
		Single Family Households (SF HH)	Multi family Households (MF HH)	Employees	Per SF HH	Per MF HH	Per Employee	Single Family (SF) ³	Multifamily (MF) ⁴	Non-Residential (NR) ⁵	Subtotal ⁶	Non-Revenue ⁷	Total ⁸	
2003	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2004	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2005	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2006	n/a	4,629	365	3,737	188	160	90	870,309	58,347	336,301	1,264,957	36,754	1,301,711	2,282,632
2007	n/a	4,719	372	3,809	188	160	90	887,249	59,515	342,831	1,289,595	109,616	1,399,211	2,378,658
2008	n/a	4,810	379	3,882	188	160	90	904,189	60,683	349,361	1,314,233	111,710	1,425,943	2,424,103
2009	1	6,239	484	5,187	188	160	90	1,172,843	77,454	466,842	1,717,139	145,957	1,863,096	3,167,263
2010	2	6,235	646	5,284	188	160	90	1,172,103	103,380	475,597	1,751,080	148,842	1,899,922	3,229,867
2011	3	6,385	662	5,427	188	160	90	1,200,307	105,881	488,441	1,794,629	152,543	1,947,172	3,310,193
2012	4	6,535	677	5,570	188	160	90	1,228,510	108,383	501,284	1,838,178	156,245	1,994,423	3,390,519
2013	5	6,685	693	5,713	188	160	90	1,256,714	110,884	514,128	1,881,727	159,947	2,041,673	3,470,845
2014	6	6,835	709	5,855	188	160	90	1,284,918	113,386	526,972	1,925,275	163,648	2,088,924	3,551,170
2015	7	6,985	724	5,998	188	160	90	1,313,121	115,887	539,816	1,968,824	167,350	2,136,174	3,631,496
2016	8	7,135	740	6,141	188	160	90	1,341,325	118,388	552,659	2,012,373	171,052	2,183,425	3,711,822
2017	9	7,285	756	6,283	188	160	90	1,369,529	120,890	565,503	2,055,922	174,753	2,230,675	3,792,148
2018	10	7,435	771	6,426	188	160	90	1,397,732	123,391	578,347	2,099,471	178,455	2,277,926	3,872,474
2019	11	7,585	787	6,569	188	160	90	1,425,936	125,893	591,191	2,143,020	182,157	2,325,176	3,952,800
2020	12	7,669	887	6,711	188	160	90	1,441,686	141,976	604,034	2,187,697	185,954	2,373,651	4,035,207
2021	13	7,822	905	6,865	188	160	90	1,470,552	144,746	617,886	2,233,184	189,821	2,423,005	4,119,108
2022	14	7,976	922	7,019	188	160	90	1,499,417	147,517	631,738	2,278,672	193,687	2,472,359	4,203,010
2023	15	8,129	939	7,173	188	160	90	1,528,283	150,287	645,590	2,324,159	197,554	2,521,713	4,286,911
2024	16	8,283	957	7,327	188	160	90	1,557,148	153,057	659,441	2,369,647	201,420	2,571,067	4,370,813
2025	17	8,436	974	7,481	188	160	90	1,586,013	155,828	673,293	2,415,134	205,286	2,620,420	4,454,715
2026	18	8,590	991	7,635	188	160	90	1,614,879	158,598	687,145	2,460,621	209,153	2,669,774	4,538,616
2027	19	8,743	1,009	7,789	188	160	90	1,643,744	161,368	700,996	2,506,109	213,019	2,719,128	4,622,518
2028	20	8,897	1,026	7,943	188	160	90	1,672,610	164,138	714,848	2,551,596	216,886	2,768,482	4,706,420

1. From the demographics tables.

2. From the water use factor table.

3. The number of single family households multiplied by the water use per single family household.

4. The number of multifamily households multiplied by the water use per multifamily household.

5. The number of employees multiplied by the water use per employee.

6. The sum of the SF, MF, and Non-Residential demands.

7. The sum of the SF, MF, and Non-Residential demands multiplied by the percent of "retail non-revenue water" as a percent of sales. (Note this is intentionally different than non-revenue as a percent of production.)

8. The sum of the SF, MF, and Non-Residential demands plus the non-revenue water.

9. The total average day demand multiplied by a peaking factor of 1.7 which is the 2004-2006 average peaking factor. For 2006, the actual peak day production number is used.

Table 7-6 Demand Forecast – Pressure Zone 240 – South (without additional conservation)

Calendar Year	Plan Year	Demographics ¹			Water Use Factors (gpd) ²			Demand						
								Average Day Demand (ADD gpd)						Maximum Day Demand (MDD gpd) ⁹
		Single Family Households (SF HH)	Multi family Households (MF HH)	Employees	Per SF HH	Per MF HH	Per Employee	Single Family (SF) ³	Multifamily (MF) ⁴	Non-Residential (NR) ⁵	Subtotal ⁶	Non-Revenue ⁷	Total ⁸	
2003	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2004	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2005	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2006	n/a	1,003	310	264	188	160	90	188,626	49,631	23,718	261,975	7,612	269,586	472,737
2007	n/a	1,026	315	266	188	160	90	192,930	50,476	23,972	267,379	22,727	290,106	493,181
2008	n/a	1,049	321	269	188	160	90	197,235	51,322	24,227	272,784	23,187	295,971	503,150
2009	1	1,072	326	272	188	160	90	201,539	52,168	24,481	278,189	23,646	301,835	513,119
2010	2	1,084	345	275	188	160	90	203,809	55,233	24,736	283,778	24,121	307,899	523,428
2011	3	1,115	352	279	188	160	90	209,642	56,383	25,145	291,170	24,749	315,919	537,062
2012	4	1,146	360	284	188	160	90	215,475	57,532	25,554	298,561	25,378	323,939	550,697
2013	5	1,177	367	288	188	160	90	221,308	58,682	25,963	305,953	26,006	331,959	564,331
2014	6	1,208	374	293	188	160	90	227,141	59,831	26,373	313,345	26,634	339,980	577,965
2015	7	1,239	381	298	188	160	90	232,975	60,981	26,782	320,737	27,263	348,000	591,599
2016	8	1,270	388	302	188	160	90	238,808	62,130	27,191	328,129	27,891	356,020	605,234
2017	9	1,301	395	307	188	160	90	244,641	63,280	27,600	335,521	28,519	364,040	618,868
2018	10	1,332	403	311	188	160	90	250,474	64,429	28,010	342,913	29,148	372,060	632,502
2019	11	1,363	410	316	188	160	90	256,307	65,579	28,419	350,305	29,776	380,080	646,137
2020	12	1,381	434	320	188	160	90	259,712	69,377	28,828	357,916	30,423	388,339	660,177
2021	13	1,411	442	325	188	160	90	265,187	70,669	29,221	365,078	31,032	396,109	673,386
2022	14	1,440	450	329	188	160	90	270,663	71,961	29,615	372,239	31,640	403,879	686,595
2023	15	1,469	458	333	188	160	90	276,139	73,254	30,008	379,400	32,249	411,649	699,804
2024	16	1,498	466	338	188	160	90	281,614	74,546	30,401	386,562	32,858	419,419	713,013
2025	17	1,527	474	342	188	160	90	287,090	75,838	30,795	393,723	33,466	427,189	726,222
2026	18	1,556	482	347	188	160	90	292,565	77,131	31,188	400,884	34,075	434,959	739,431
2027	19	1,585	490	351	188	160	90	298,041	78,423	31,581	408,045	34,684	442,729	752,640
2028	20	1,614	498	355	188	160	90	303,516	79,716	31,975	415,207	35,293	450,499	765,849

1. From the demographics tables.

2. From the water use factor table.

3. The number of single family households multiplied by the water use per single family household.

4. The number of multifamily households multiplied by the water use per multifamily household.

5. The number of employees multiplied by the water use per employee.

6. The sum of the SF, MF, and Non-Residential demands.

7. The sum of the SF, MF, and Non-Residential demands multiplied by the percent of "retail non-revenue water" as a percent of sales. (Note this is intentionally different than non-revenue as a percent of production.)

8. The sum of the SF, MF, and Non-Residential demands plus the non-revenue water.

9. The total average day demand multiplied by a peaking factor of 1.7 which is the 2004-2006 average peaking factor. For 2006, the actual peak day production number is used.

Table 7-7 Demand Forecast – Pressure Zone 260 (without additional conservation)

Calendar Year	Plan Year	Demographics ¹			Water Use Factors (gpd) ²			Demand						
								Average Day Demand (ADD gpd)						Maximum Day Demand (MDD gpd)
		Single Family Households (SF HH)	Multifamily Households (MF HH)	Employees	Per SF HH	Per MF HH	Per Employee	Single Family (SF) ³	Multifamily (MF) ⁴	Non-Residential (NR) ⁵	Subtotal ⁶	Non-Revenue ⁷	Total ⁸	
2003	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2004	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2005	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2006	n/a	2,269	204	722	188	160	90	426,484	32,565	64,947	523,997	15,225	539,222	945,559
2007	n/a	2,304	207	726	188	160	90	433,156	33,068	65,329	531,554	45,182	576,736	980,452
2008	n/a	2,340	210	730	188	160	90	439,829	33,571	65,712	539,112	45,824	584,936	994,392
2009	1	2,377	213	735	188	160	90	446,791	34,092	66,135	547,018	46,497	593,515	1,008,975
2010	2	2,397	235	739	188	160	90	450,684	37,632	66,518	554,835	47,161	601,996	1,023,393
2011	3	2,443	240	748	188	160	90	459,326	38,374	67,303	565,003	48,025	613,028	1,042,148
2012	4	2,489	244	757	188	160	90	467,967	39,117	68,087	575,171	48,890	624,060	1,060,903
2013	5	2,535	249	765	188	160	90	476,608	39,859	68,872	585,339	49,754	635,093	1,079,658
2014	6	2,581	254	774	188	160	90	485,250	40,602	69,656	595,507	50,618	646,125	1,098,413
2015	7	2,627	258	783	188	160	90	493,891	41,344	70,440	605,675	51,482	657,158	1,117,168
2016	8	2,673	263	791	188	160	90	502,532	42,086	71,225	615,843	52,347	668,190	1,135,923
2017	9	2,719	268	800	188	160	90	511,174	42,829	72,009	626,011	53,211	679,222	1,154,678
2018	10	2,765	272	809	188	160	90	519,815	43,571	72,793	636,179	54,075	690,255	1,173,433
2019	11	2,811	277	818	188	160	90	528,456	44,313	73,578	646,348	54,940	701,287	1,192,188
2020	12	2,834	311	826	188	160	90	532,811	49,730	74,362	656,904	55,837	712,741	1,211,659
2021	13	2,885	317	834	188	160	90	542,472	50,662	75,068	668,202	56,797	725,000	1,232,499
2022	14	2,937	322	842	188	160	90	552,133	51,594	75,774	679,501	57,758	737,258	1,253,339
2023	15	2,988	328	850	188	160	90	561,795	52,525	76,480	690,799	58,718	749,517	1,274,179
2024	16	3,040	334	858	188	160	90	571,456	53,457	77,185	702,098	59,678	761,776	1,295,019
2025	17	3,091	340	865	188	160	90	581,117	54,388	77,891	713,396	60,639	774,035	1,315,859
2026	18	3,142	346	873	188	160	90	590,778	55,320	78,597	724,695	61,599	786,294	1,336,699
2027	19	3,194	352	881	188	160	90	600,439	56,251	79,303	735,993	62,559	798,553	1,357,539
2028	20	3,245	357	889	188	160	90	610,100	57,183	80,009	747,292	63,520	810,811	1,378,379

1. From the demographics tables.

2. From the water use factor table.

3. The number of single family households multiplied by the water use per single family household.

4. The number of multifamily households multiplied by the water use per multifamily household.

5. The number of employees multiplied by the water use per employee.

6. The sum of the SF, MF, and Non-Residential demands.

7. The sum of the SF, MF, and Non-Residential demands multiplied by the percent of "retail non-revenue water" as a percent of sales. (Note this is intentionally different than non-revenue as a percent of production.)

8. The sum of the SF, MF, and Non-Residential demands plus the non-revenue water.

9. The total average day demand multiplied by a peaking factor of 1.7 which is the 2004-2006 average peaking factor. For 2006, the actual peak day production number is used.

Table 7-8 Demand Forecast – Pressure Zone 327 (without additional conservation)

Calendar Year	Plan Year	Demographics ¹			Water Use Factors (gpd) ²			Demand						
								Average Day Demand (ADD gpd)						Maximum Day Demand (MDD gpd) ⁹
		Single Family Households (SF HH)	Multifamily Households (MF HH)	Employees	Per SF HH	Per MF HH	Per Employee	Single Family (SF) ³	Multifamily (MF) ⁴	Non-Residential (NR) ⁵	Subtotal ⁶	Non-Revenue ⁷	Total ⁸	
2003	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2004	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2005	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2006	n/a	121	1	34	188	160	90	22,828	176	3,077	26,081	758	26,839	47,063
2007	n/a	143	1	40	188	160	90	26,969	208	3,636	30,813	2,619	33,432	56,835
2008	n/a	165	1	47	188	160	90	31,110	240	4,195	35,545	3,021	38,567	65,563
2009	1	188	2	53	188	160	90	35,251	272	4,754	40,277	3,424	43,701	74,292
2010	2	210	2	59	188	160	90	39,392	303	5,314	45,009	3,826	48,835	83,020
2011	3	232	2	65	188	160	90	43,534	335	5,873	49,742	4,228	53,970	91,749
2012	4	254	2	71	188	160	90	47,676	367	6,432	54,475	4,630	59,105	100,479
2013	5	276	2	78	188	160	90	51,817	399	6,991	59,207	5,033	64,240	109,208
2014	6	298	3	84	188	160	90	55,959	431	7,550	63,940	5,435	69,375	117,937
2015	7	320	3	90	188	160	90	60,100	463	8,109	68,673	5,837	74,510	126,666
2016	8	342	3	96	188	160	90	64,242	495	8,669	73,405	6,239	79,645	135,396
2017	9	364	3	103	188	160	90	68,384	526	9,228	78,138	6,642	84,779	144,125
2018	10	386	3	109	188	160	90	72,525	558	9,787	82,870	7,044	89,914	152,854
2019	11	408	4	115	188	160	90	76,667	590	10,346	87,603	7,446	95,049	161,584
2020	12	430	4	121	188	160	90	80,808	622	10,905	92,336	7,849	100,184	170,313
2021	13	452	4	127	188	160	90	84,951	654	11,464	97,069	8,251	105,320	179,043
2022	14	474	4	134	188	160	90	89,093	686	12,024	101,802	8,653	110,455	187,774
2023	15	496	4	140	188	160	90	93,235	718	12,583	106,535	9,055	115,591	196,504
2024	16	518	5	146	188	160	90	97,377	749	13,142	111,268	9,458	120,726	205,235
2025	17	540	5	152	188	160	90	101,519	781	13,701	116,002	9,860	125,862	213,965
2026	18	562	5	158	188	160	90	105,661	813	14,260	120,735	10,262	130,997	222,695
2027	19	584	5	165	188	160	90	109,803	845	14,820	125,468	10,665	136,133	231,426
2028	20	606	5	171	188	160	90	113,945	877	15,379	130,201	11,067	141,268	240,156

1. From the demographics tables.

2. From the water use factor table.

3. The number of single family households multiplied by the water use per single family household.

4. The number of multifamily households multiplied by the water use per multifamily household.

5. The number of employees multiplied by the water use per employee.

6. The sum of the SF, MF, and Non-Residential demands.

7. The sum of the SF, MF, and Non-Residential demands multiplied by the percent of "retail non-revenue water" as a percent of sales. (Note this is intentionally different than non-revenue as a percent of production.)

8. The sum of the SF, MF, and Non-Residential demands plus the non-revenue water.

9. The total average day demand multiplied by a peaking factor of 1.7 which is the 2004-2006 average peaking factor. For 2006, the actual peak day production number is used.

Table 7-9 Demand Forecast – Pressure Zone 360 (without additional conservation)

Calendar Year	Plan Year	Demographics ¹			Water Use Factors (gpd) ²			Demand						
								Average Day Demand (ADD gpd)						Maximum Day Demand (MDD gpd) ⁹
		Single Family Households (SF HH)	Multifamily Households (MF HH)	Employees	Per SF HH	Per MF HH	Per Employee	Single Family (SF) ³	Multifamily (MF) ⁴	Non-Residential (NR) ⁵	Subtotal ⁶	Non-Revenue ⁷	Total ⁸	
2003	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2004	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2005	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2006	n/a	394	17	12	188	160	90	74,126	2,782	1,041	77,949	2,265	80,213	140,659
2007	n/a	408	18	12	188	160	90	76,716	2,878	1,083	80,676	6,857	87,534	148,807
2008	n/a	422	19	12	188	160	90	79,306	2,974	1,125	83,404	7,089	90,493	153,839
2009	1	436	19	13	188	160	90	81,895	3,069	1,167	86,132	7,321	93,453	158,870
2010	2	455	12	13	188	160	90	85,633	1,914	1,209	88,755	7,544	96,300	163,709
2011	3	475	12	14	188	160	90	89,246	1,994	1,275	92,515	7,864	100,379	170,644
2012	4	494	13	15	188	160	90	92,859	2,074	1,342	96,275	8,183	104,458	177,578
2013	5	513	13	16	188	160	90	96,472	2,154	1,408	100,034	8,503	108,537	184,513
2014	6	532	14	16	188	160	90	100,085	2,234	1,475	103,794	8,822	112,616	191,448
2015	7	552	14	17	188	160	90	103,749	2,316	1,542	107,607	9,147	116,754	198,482
2016	8	571	15	18	188	160	90	107,364	2,396	1,609	111,369	9,466	120,835	205,420
2017	9	590	15	19	188	160	90	110,979	2,476	1,675	115,130	9,786	124,916	212,358
2018	10	610	16	19	188	160	90	114,594	2,556	1,742	118,892	10,106	128,998	219,296
2019	11	629	16	20	188	160	90	118,208	2,636	1,809	122,653	10,426	133,079	226,234
2020	12	658	4	21	188	160	90	123,739	627	1,875	126,241	10,731	136,972	232,852
2021	13	674	4	22	188	160	90	126,748	642	1,960	129,350	10,995	140,345	238,586
2022	14	690	4	23	188	160	90	129,756	657	2,046	132,459	11,259	143,718	244,321
2023	15	706	4	24	188	160	90	132,765	672	2,131	135,568	11,523	147,091	250,055
2024	16	722	4	25	188	160	90	135,773	688	2,216	138,677	11,788	150,465	255,790
2025	17	738	4	26	188	160	90	138,782	703	2,301	141,786	12,052	153,838	261,524
2026	18	754	4	27	188	160	90	141,790	718	2,387	144,895	12,316	157,211	267,259
2027	19	770	5	27	188	160	90	144,799	733	2,472	148,004	12,580	160,584	272,993
2028	20	786	5	28	188	160	90	147,808	748	2,557	151,113	12,845	163,958	278,728

1. From the demographics tables.

2. From the water use factor table.

3. The number of single family households multiplied by the water use per single family household.

4. The number of multifamily households multiplied by the water use per multifamily household.

5. The number of employees multiplied by the water use per employee.

6. The sum of the SF, MF, and Non-Residential demands.

7. The sum of the SF, MF, and Non-Residential demands multiplied by the percent of "retail non-revenue water" as a percent of sales. (Note this is intentionally different than non-revenue as a percent of production.)

8. The sum of the SF, MF, and Non-Residential demands plus the non-revenue water.

9. The total average day demand multiplied by a peaking factor of 1.7 which is the 2004-2006 average peaking factor. For 2006, the actual peak day production number is used.

Table 7-10 Demand Forecast – Pressure Zone 460 (without additional conservation)

Calendar Year	Plan Year	Demographics ¹			Water Use Factors (gpd) ²			Demand						
								Average Day Demand (ADD gpd)						Maximum Day Demand (MDD gpd) ⁹
		Single Family Households (SF HH)	Multifamily Households (MF HH)	Employees	Per SF HH	Per MF HH	Per Employee	Single Family (SF) ³	Multifamily (MF) ⁴	Non-Residential (NR) ⁵	Subtotal ⁶	Non-Revenue ⁷	Total ⁸	
2003	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2004	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2005	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2006	n/a	25	0	2	188	160	90	4,638	12	145	4,795	139	4,934	8,653
2007	n/a	26	0	2	188	160	90	4,849	12	149	5,010	426	5,436	9,241
2008	n/a	27	0	2	188	160	90	5,059	12	153	5,225	444	5,669	9,638
2009	1	28	0	2	188	160	90	5,270	13	157	5,440	462	5,903	10,034
2010	2	29	0	2	188	160	90	5,481	13	161	5,655	481	6,136	10,431
2011	3	30	0	2	188	160	90	5,699	13	166	5,879	500	6,378	10,843
2012	4	31	0	2	188	160	90	5,918	14	171	6,102	519	6,621	11,255
2013	5	33	0	2	188	160	90	6,136	14	175	6,325	538	6,863	11,667
2014	6	34	0	2	188	160	90	6,354	14	180	6,548	557	7,105	12,079
2015	7	35	0	2	188	160	90	6,573	14	185	6,772	576	7,347	12,490
2016	8	36	0	2	188	160	90	6,791	15	189	6,995	595	7,590	12,902
2017	9	37	0	2	188	160	90	7,009	15	194	7,218	614	7,832	13,314
2018	10	38	0	2	188	160	90	7,227	15	199	7,441	633	8,074	13,726
2019	11	40	0	2	188	160	90	7,446	16	203	7,665	652	8,316	14,138
2020	12	41	0	2	188	160	90	7,664	16	208	7,888	670	8,558	14,549
2021	13	42	0	2	188	160	90	7,891	16	213	8,120	690	8,810	14,978
2022	14	43	0	2	188	160	90	8,118	17	217	8,352	710	9,062	15,406
2023	15	44	0	2	188	160	90	8,345	17	222	8,584	730	9,314	15,834
2024	16	46	0	3	188	160	90	8,572	17	227	8,816	749	9,566	16,262
2025	17	47	0	3	188	160	90	8,800	18	231	9,049	769	9,818	16,690
2026	18	48	0	3	188	160	90	9,027	18	236	9,281	789	10,070	17,118
2027	19	49	0	3	188	160	90	9,254	18	241	9,513	809	10,321	17,546
2028	20	50	0	3	188	160	90	9,481	19	245	9,745	828	10,573	17,974

1. From the demographics tables.

2. From the water use factor table.

3. The number of single family households multiplied by the water use per single family household.

4. The number of multifamily households multiplied by the water use per multifamily household.

5. The number of employees multiplied by the water use per employee.

6. The sum of the SF, MF, and Non-Residential demands.

7. The sum of the SF, MF, and Non-Residential demands multiplied by the percent of "retail non-revenue water" as a percent of sales. (Note this is intentionally different than non-revenue as a percent of production.)

8. The sum of the SF, MF, and Non-Residential demands plus the non-revenue water.

9. The total average day demand multiplied by a peaking factor of 1.7 which is the 2004-2006 average peaking factor. For 2006, the actual peak day production number is used.

Table 7-11 Demand Forecast – Pressure Zone 510 (without additional conservation)

Calendar Year	Plan Year	Demographics ¹			Water Use Factors (gpd) ²			Demand						
								Average Day Demand (ADD gpd)						Maximum Day Demand (MDD gpd) ⁹
		Single Family Households (SF HH)	Multifamily Households (MF HH)	Employees	Per SF HH	Per MF HH	Per Employee	Single Family (SF) ³	Multifamily (MF) ⁴	Non-Residential (NR) ⁵	Subtotal ⁶	Non-Revenue ⁷	Total ⁸	
2003	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2004	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2005	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2006	n/a	1,110	44	36	188	160	90	208,590	7,085	3,225	218,900	6,360	225,260	395,008
2007	n/a	1,148	46	37	188	160	90	215,908	7,330	3,354	226,591	19,260	245,851	417,947
2008	n/a	1,187	47	39	188	160	90	223,226	7,574	3,483	234,282	19,914	254,196	432,133
2009	1	1,441	49	53	188	160	90	270,858	7,818	4,805	283,481	24,096	307,577	522,881
2010	2	1,502	30	55	188	160	90	282,426	4,875	4,974	292,276	24,843	317,119	539,103
2011	3	1,566	32	58	188	160	90	294,420	5,079	5,239	304,738	25,903	330,641	562,090
2012	4	1,630	33	61	188	160	90	306,413	5,283	5,505	317,200	26,962	344,162	585,076
2013	5	1,694	34	64	188	160	90	318,406	5,487	5,770	329,662	28,021	357,684	608,062
2014	6	1,757	36	67	188	160	90	330,399	5,691	6,035	342,125	29,081	371,205	631,049
2015	7	1,821	37	70	188	160	90	342,392	5,895	6,300	354,587	30,140	384,727	654,035
2016	8	1,885	38	73	188	160	90	354,385	6,099	6,565	367,049	31,199	398,248	677,022
2017	9	1,949	39	76	188	160	90	366,379	6,303	6,830	379,511	32,258	411,769	700,008
2018	10	2,013	41	79	188	160	90	378,372	6,507	7,095	391,973	33,318	425,291	722,994
2019	11	2,076	42	82	188	160	90	390,365	6,711	7,360	404,435	34,377	438,812	745,981
2020	12	2,166	10	85	188	160	90	407,242	1,596	7,625	416,462	35,399	451,862	768,165
2021	13	2,219	10	89	188	160	90	417,172	1,634	7,970	426,776	36,276	463,052	787,188
2022	14	2,272	10	92	188	160	90	427,101	1,673	8,316	437,090	37,153	474,242	806,212
2023	15	2,325	11	96	188	160	90	437,030	1,712	8,661	447,403	38,029	485,433	825,236
2024	16	2,377	11	100	188	160	90	446,960	1,750	9,007	457,717	38,906	496,623	844,259
2025	17	2,430	11	104	188	160	90	456,889	1,789	9,352	468,031	39,783	507,813	863,283
2026	18	2,483	11	108	188	160	90	466,819	1,828	9,698	478,344	40,659	519,004	882,306
2027	19	2,536	12	112	188	160	90	476,748	1,866	10,044	488,658	41,536	530,194	901,330
2028	20	2,488	12	115	188	160	90	467,698	1,905	10,389	479,992	40,799	520,792	885,346

1. From the demographics tables.

2. From the water use factor table.

3. The number of single family households multiplied by the water use per single family household.

4. The number of multifamily households multiplied by the water use per multifamily household.

5. The number of employees multiplied by the water use per employee.

6. The sum of the SF, MF, and Non-Residential demands.

7. The sum of the SF, MF, and Non-Residential demands multiplied by the percent of "retail non-revenue water" as a percent of sales. (Note this is intentionally different than non-revenue as a percent of production.)

8. The sum of the SF, MF, and Non-Residential demands plus the non-revenue water.

9. The total average day demand multiplied by a peaking factor of 1.7 which is the 2004-2006 average peaking factor. For 2006, the actual peak day production number is used.

Table 7-12 Demand Forecast – Pressure Zone “Unclassified” (without additional conservation)

Calendar Year	Plan Year	Demographics ¹			Water Use Factors (gpd) ²			Demand						
								Average Day Demand (ADD gpd)						Maximum Day Demand (MDD gpd)
		Single Family Households (SF HH)	Multifamily Households (MF HH)	Employees	Per SF HH	Per MF HH	Per Employee	Single Family (SF) ³	Multifamily (MF) ⁴	Non-Residential (NR) ⁵	Subtotal ⁶	Non-Revenue ⁷	Total ⁸	
2003	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2004	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2005	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2006	n/a	155	9	56	188	160	90	29,192	1,479	5,024	35,694	1,037	36,731	64,410
2007	n/a	160	10	58	188	160	90	30,038	1,521	5,227	36,786	3,127	39,913	67,852
2008	n/a	164	10	60	188	160	90	30,884	1,564	5,430	37,878	3,220	41,098	69,866
2009	1	991	68	295	188	160	90	186,216	10,889	26,517	223,623	19,008	242,631	412,472
2010	2	1,013	75	300	188	160	90	190,370	12,045	27,022	229,438	19,502	248,940	423,198
2011	3	1,047	78	308	188	160	90	196,868	12,424	27,698	236,990	20,144	257,134	437,127
2012	4	1,082	80	315	188	160	90	203,365	12,803	28,373	244,541	20,786	265,327	451,057
2013	5	1,116	82	323	188	160	90	209,862	13,182	29,049	252,093	21,428	273,521	464,986
2014	6	1,151	85	330	188	160	90	216,359	13,561	29,724	259,645	22,070	281,715	478,915
2015	7	2,507	111	378	188	160	90	471,330	17,776	34,004	523,110	44,464	567,575	964,877
2016	8	2,591	114	387	188	160	90	487,167	18,287	34,852	540,307	45,926	586,233	996,596
2017	9	2,676	117	397	188	160	90	503,004	18,799	35,700	557,504	47,388	604,892	1,028,316
2018	10	2,760	121	406	188	160	90	518,841	19,311	36,549	574,701	48,850	623,550	1,060,035
2019	11	2,844	124	416	188	160	90	534,678	19,823	37,397	591,897	50,311	642,209	1,091,754
2020	12	2,944	107	425	188	160	90	553,468	17,113	38,245	608,826	51,750	660,577	1,122,980
2021	13	3,012	110	437	188	160	90	566,300	17,535	39,341	623,176	52,970	676,146	1,149,447
2022	14	3,080	112	449	188	160	90	579,132	17,956	40,437	637,525	54,190	691,715	1,175,915
2023	15	3,149	115	461	188	160	90	591,964	18,378	41,533	651,874	55,409	707,283	1,202,382
2024	16	3,217	117	474	188	160	90	604,796	18,799	42,628	666,223	56,629	722,852	1,228,849
2025	17	3,285	120	486	188	160	90	617,627	19,221	43,724	680,573	57,849	738,421	1,255,316
2026	18	3,354	123	498	188	160	90	630,459	19,643	44,820	694,922	59,068	753,990	1,281,784
2027	19	3,422	125	510	188	160	90	643,291	20,064	45,916	709,271	60,288	769,559	1,308,251
2028	20	3,490	128	522	188	160	90	656,123	20,486	47,012	723,620	61,508	785,128	1,334,718

1. From the demographics tables.

2. From the water use factor table.

3. The number of single family households multiplied by the water use per single family household.

4. The number of multifamily households multiplied by the water use per multifamily household.

5. The number of employees multiplied by the water use per employee.

6. The sum of the SF, MF, and Non-Residential demands.

7. The sum of the SF, MF, and Non-Residential demands multiplied by the percent of "retail non-revenue water" as a percent of sales. (Note this is intentionally different than non-revenue as a percent of production.)

8. The sum of the SF, MF, and Non-Residential demands plus the non-revenue water.

9. The total average day demand multiplied by a peaking factor of 1.7 which is the 2004-2006 average peaking factor. For 2006, the actual peak day production number is used.